

INDEPENDENT MAINTENANCE MARKET IN EUROPE

1991 - 1996

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Market Analysis Programme - Europe

Independent Maintenance Market, Western Europe, 1991-1996

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Abstract

This research study provides an analysis of the Western Europe market for independent maintenance. Contained within the report is a five year market forecast for Western Europe covering the period 1991 to 1996.

The study identifies and analyses the factors that are influencing the market and its growth together with the challenges facing independent maintenance vendors. In addition areas of opportunity for independent maintenance vendors are identified, quantified and discussed.

Contained within the study are market forecasts for the individual country markets in Western Europe: France, Germany, United Kingdom, Italy, Sweden, Netherlands, Belgium and Spain. Leading vendors and their revenues in each country market are listed.

Additionally the study provides profiles on the activities of independent maintenance companies and on the leading equipment vendor multi-vendor maintenance activities.

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Introduction



I Introduction

This research study has been produced by INPUT as part of the 1991 Customer Service Programme - Europe.

A Objectives

The primary objectives of this study are to analyse the market for independent maintenance in Western Europe and in doing so to identify the opportunities, challenges and risks that vendors face in the market. The study also focuses on the factors that will influence the future development of the independent maintenance market.

Additional objectives are to:-

- Provide individual market forecasts for the major country markets in Western Europe
- Provide tactical data and profiles relating to the activities of the major equipment vendors and independent maintenance vendors.

B Scope

This study assesses the entire market for independent maintenance in Western Europe and relates to three discrete sectors of the market

- Independent maintenance vendors
- Dealers and Distributors
- Equipment vendor multi-vendor maintenance

C Methodology

Field research for this study was conducted between April and July 1991.

Vendor data were obtained during interviews with 22 independent maintenance companies and 8 equipment vendors. Data relating to additional vendors were obtained by requests to compile up-to-date profile information, this activity will be ongoing.

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User data were collected during INPUT's 1990 survey of computer users throughout Western Europe during which over 1200 users were interviewed. These interviews were conducted by telephone, in the respondents mother tongue, by a native of that country. Details related to user sample are provided by Exhibits I-1 and I-2.

Exhibit I-1

1990 User Interview Programme User Sample by Vendor

Vendor	System Range			Total
	Large	Medium	Small	
Amdahl	105	-	-	105
Bull	7	38	37	82
Digital	31	31	29	91
Hewlett-Packard	-	71	10	81
IBM	66	148	43	257
ICL	45	107	46	198
NCR	7	29	-	36
Philips	-	63	16	79
Siemens	5	17	3	25
Stratus	-	40	-	40
Unisys	18	42	17	77
Wang	21	28	33	82
Other Vendors	19	24	15	58
Total	324	638	249	1,211

Exhibit I-2**1990 User Interview Programme
User Sample by Country**

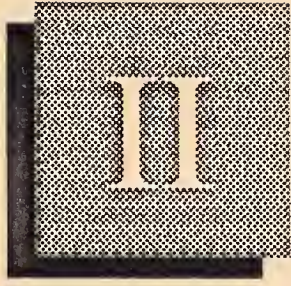
	System Range			
Country	Large	Medium	Small	Total
Belgium	15	23	8	46
France	34	94	55	183
Germany	39	93	22	154
Italy	44	50	24	118
Netherlands	16	54	17	87
Norway	7	10	7	24
Spain	22	52	16	90
Sweden	13	51	18	82
United Kingdom	102	164	70	336
Other European Countries	32	47	12	91
Total	324	638	249	1,211

D

Report Structure

The research papers that comprise this study are organised as follows:-

- Section II is an executive overview that presents a concise summary of the whole study.
- Section III provides a market forecast for the whole of Western Europe and for nine country markets.
- Section IV provides analysis and discussion of the major threats to independent maintenance.
- Section V provides identification of the strategic opportunities available for independent maintenance vendors.
- Section VI contains profiles related to the multi-vendor maintenance activities of the major equipment vendors.
- Section VII contains profiles on the leading five independent maintenance companies in Western Europe.
- Appendix A provides individual profiles on other independent maintenance companies.
- Appendix B reconciles INPUT's 1990 and 1991 market forecasts for the independent vendor sector of the Western European independent maintenance market.



Executive Overview



II Executive Overview

**A
First Signs of Attrition Hit the Independent Maintenance Market**

The Western European independent maintenance market will move towards maturity during the first half of the 1990's. This development will be characterised by:-

- . Declining revenue growth and increasing emphasis by independent maintenance companies of effective management of their assets - people, inventory and acquisitions
- . A significant increase in competitive pressure
- . An increased focus on market segmentation

The future success of the independent sector will depend upon the ability of companies to adapt to change at both the strategic and tactical levels. Exhibit II-1 categorises the key challenges that the sector must face if it is to maintain long term viability.

However, although the challenge is significant, areas of opportunity do exist and it is predicted that independent vendors will continue to develop within the customer services business.

Exhibit II-1

The Challenges Facing Independent Maintenance

- | |
|--|
| <ul style="list-style-type: none">. Market Maturity. Declining Growth in Major Market Segment. The Development of Alternative Revenue Streams. Segmentation. The Growth of Service Partnerships |
|--|

B

The Development of the Market

Two of the principal factors influencing the evolution of the market from a phase of rapid growth into one of maturity are:-

- The projected slowdown of revenue growth
- The change in strategic emphasis from growth to profit

1. Revenue Growth

Exhibit II-2 indicates the estimated growth of the independent maintenance market from 1991 to 1996. Assuming a Pan-European inflation rate of approximately 4.5% over the same period, the rate of real growth of approximately 10% per annum compares favourably with the real CAGR of approximately 3% predicted for the customer services market as a whole.

Exhibit II-3 reinforces this scenario by indicating the extent to which the independent sector will continue to win market share from equipment vendors. It is predicted that up to \$3.6 Billion of customer services revenue will be lost from the equipment vendors by 1996.

Exhibit II-4 provides a segmentation of the independent maintenance market into the three types of vendor that are active in the market. From this exhibit it can be seen that the independent maintenance vendors enjoy a primary position holding about a 75% share of the market.

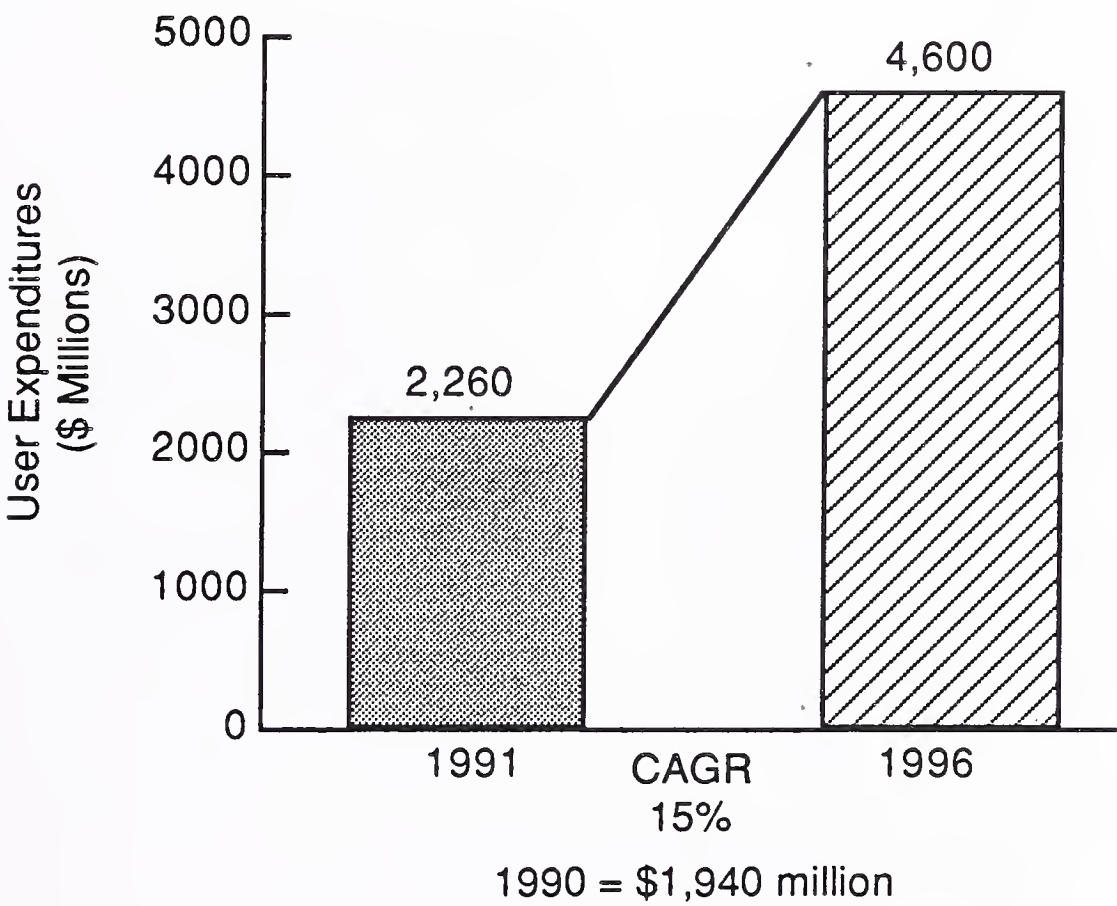
The 1990 revenues estimated for the leading independent maintenance vendors are listed in Exhibit II-5. These vendors retain a primary position in the market, between them accounting for about a 35% market share. The leading 10 independent vendors accounting for a 45% market share.

However, although these predictions offer an optimistic picture of future of the independent maintenance market, the analysis of the estimated annual growth rates that will be achieved up to 1996 provided in Exhibit II-6 indicates a marked slowdown in growth towards the end of the period. The logic underpinning this prediction is derived from a comparison of the drivers and inhibitors that will influence the development of the market contained in Exhibit II-7.

Two of the principal market drivers, namely price and service capability, primarily affect current developments in the market. It is generally accepted that competitive pricing and service capability, expressed in terms of multi-vendor capability, service quality and flexibility, have been instrumental in the growth of the market. Although these factors, combined with the slow pace of response exhibited by the manufacturers, will continue to have an influence, it is predicted that the major market inhibitors will increasingly influence the development of the market over the forecast period.

Exhibit II-2

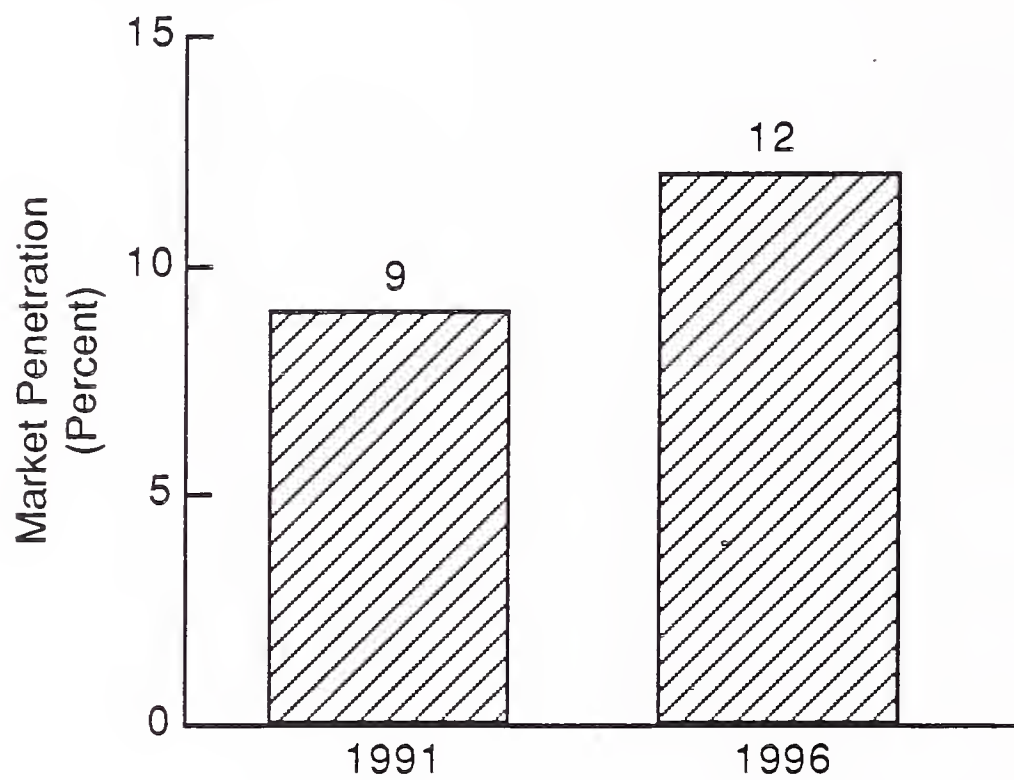
Western European Independent
Maintenance Market Growth, 1991-1996



Note: Numbers rounded

Exhibit II-3

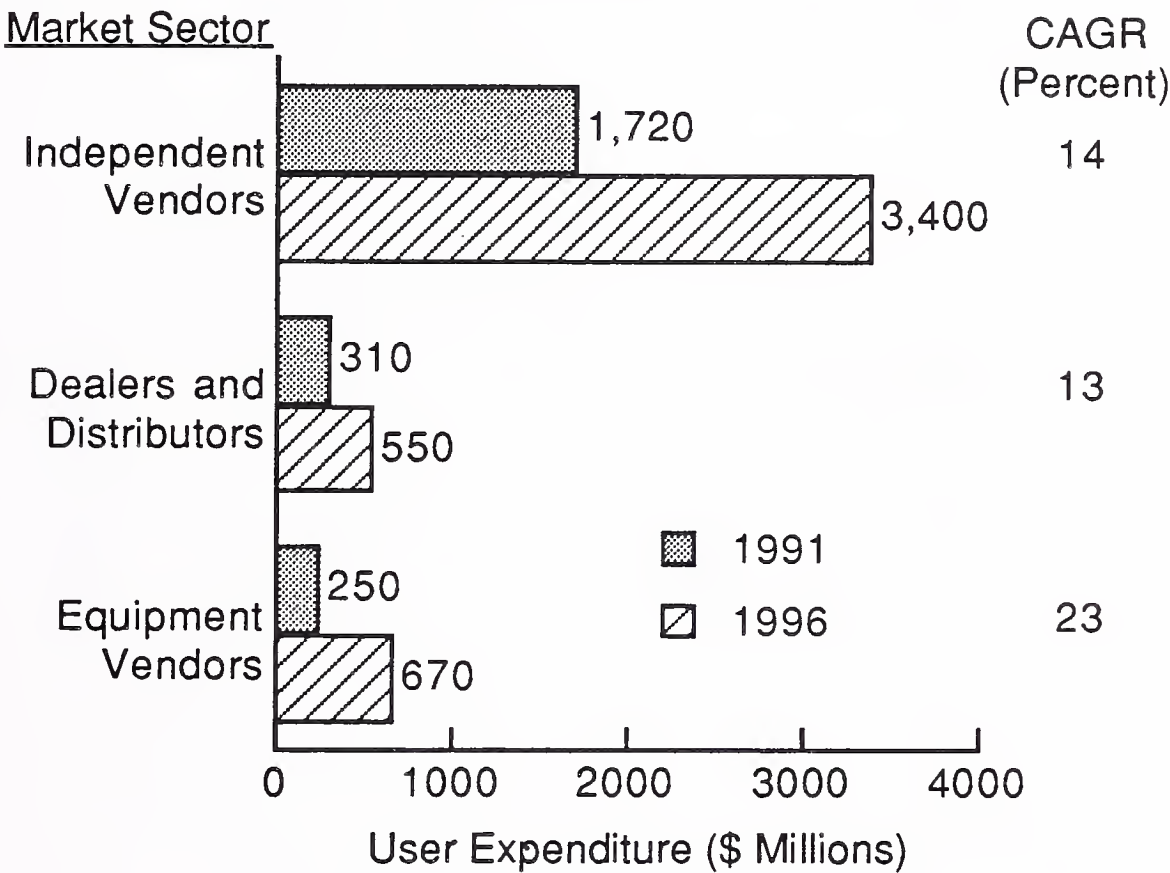
Independent Vendor Penetration of Customer Services Market



Customer Services Market Estimate
1991 = \$20.2 billion 1996 = \$29.7 billion

Exhibit II-4

Western European Independent
Maintenance Market by Sector
1991-1996



1990 = \$1,940 million

Note: Numbers rounded

Exhibit II-5

Leading Independent Vendors 1990

COMPANY	1990 REVENUES (\$ Millions)	MARKET SHARE (PERCENT)
Granada	316	16
Thomainfor	145	8
Sorbus	72	4
Getronics	71	4
Spectral/MIS	51	3

Exhibit II-6

Western European
Independent Maintenance Market
Annual Revenue Growth Rate, 1991-1996

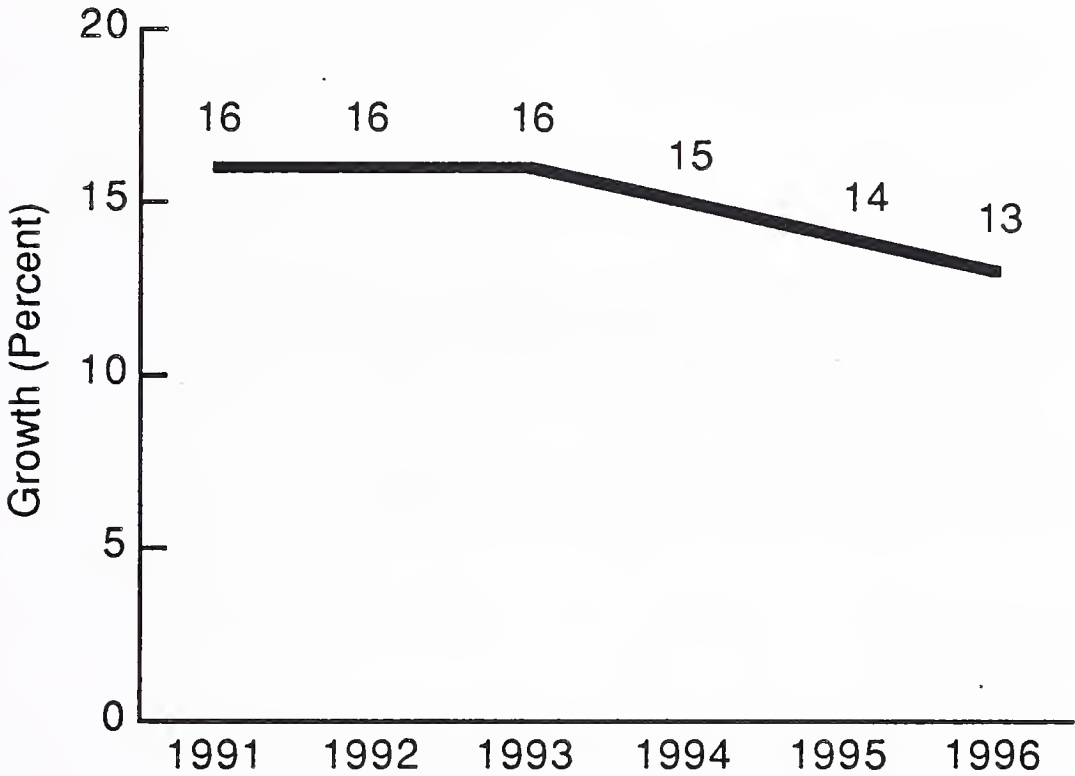


Exhibit II-7**Western European Independent Maintenance Market
Market Drivers & Inhibitors****Drivers:**

- **Price**
- **Service Capability**
- **Slow Pace of Adaptation by Equipment Vendors**
- **Growth of Networking Support**

Inhibitors:

- **Declining Growth in Hardware Maintenance Service**
- **Competition in Alternative Market Segments**
- **Growth in Service Partnership Arrangements**

2. From Growth to Profit

The development of the independent maintenance sector during the latter half of the 1980's was characterised by a focus on growth as the principal strategic goal. The top three companies in the European market, namely Granada, Thomainfor and Sorbus, all achieved their market rankings by adopting a policy of rapid expansion through acquisition.

There are clear indications that the focus has changed quite dramatically over the last twelve months. the key strategic factor driving the market is now profit. The case of Granada provides clear evidence of this trend through four specific factors:-

- Firstly, the company reported a pre-tax loss of 700,000 (approx. \$1.4 million) in its Business Services Division for the 6 months to 13th April 1991, compared with a profit of 4.8 million (approx. \$9.3 million) for the same period in 1990. The fact that the dominant company in the market has moved into loss is providing strong focus on the issue of profitability.
- Secondly, the company recruited a logistics director during the course of 1990 to increase the focus of the company on both the efficiency of the logistics operation itself and, by implication, the effective deployment of a major proportion of the company's assets. Exhibit II-8 highlights this change in strategic direction that is being implemented by independent maintenance companies.

- Thirdly, the company is in the process of terminating small contracts offering low returns and has publicly stated it's intention to pursue larger, more lucrative, service contracts.
- Finally, over the past 2 years the company has effectively terminated it's acquisition programme.

In addition to the specific example of Granada, other leading companies in the market such as Getronics and Olivetti have publicly affirmed the importance placed on the pursuit of profitable business.

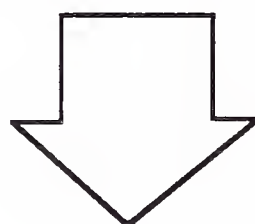
Although this change of emphasis is, in many ways typical of the evolution of a market from high growth to maturity, in the case of the independent maintenance sector it directly challenges the principal source of competitive advantage that has been established over the equipment vendors, namely price, due to a focus on the need for increased margins.

Exhibit II-9 ranks the major sources of competitive advantage that the independent sector has been able to exploit. Respondents to INPUT's user survey who use independent maintenance were asked to state the principal benefits of using an independent maintenance company. It is noteworthy that cost is the dominant factor and it illustrates the extent to which the sector will have to focus on asset management if it is to achieve an acceptable rate of return while retaining it's competitive edge.

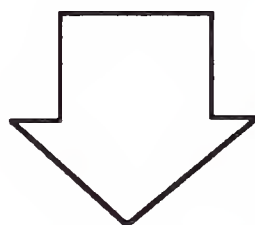
Exhibit II-8

**The Independent Maintenance Sector
A Change in Management Focus**

Reduced Emphasis on
Revenue Growth

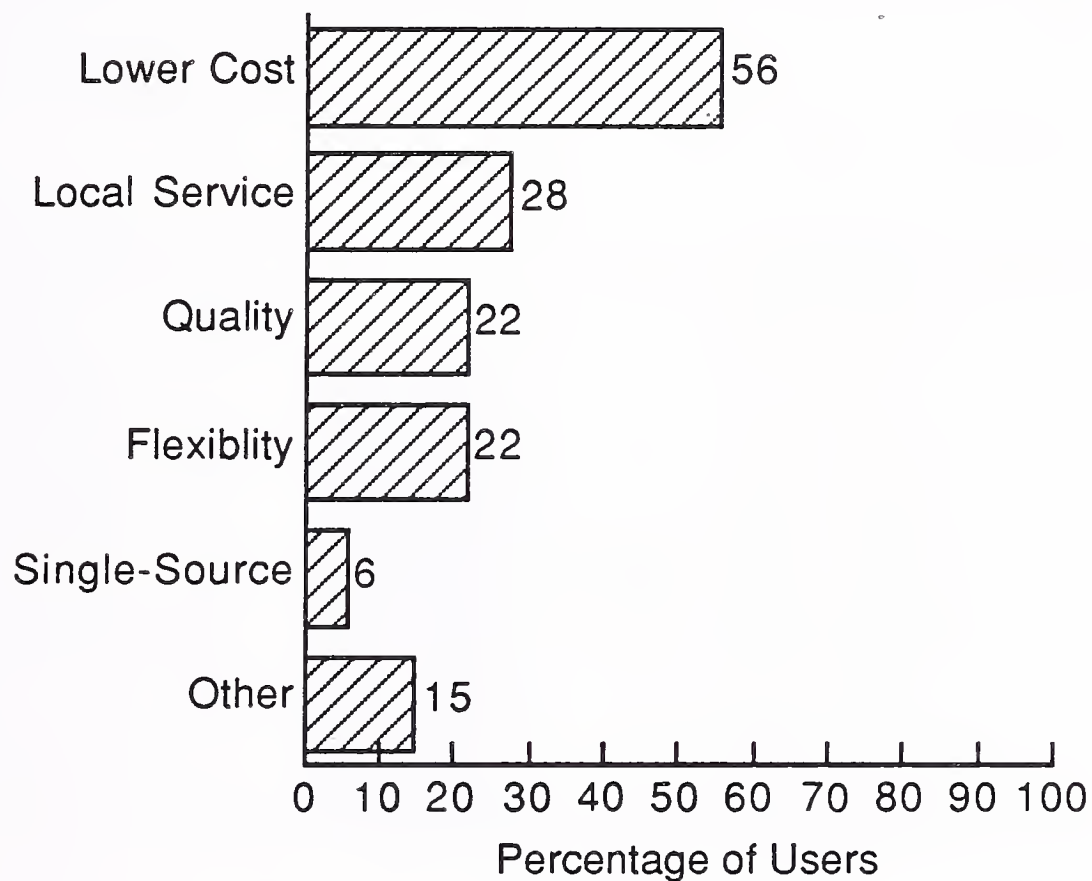


Increased Focus on Profit



Effective Asset Management

Exhibit II-9

**Independent Maintenance Vendors
Sources of Competitive Advantage**

Sample = 95

Source = INPUT Western European User Survey, 1990

Note = Multiple responses allowed

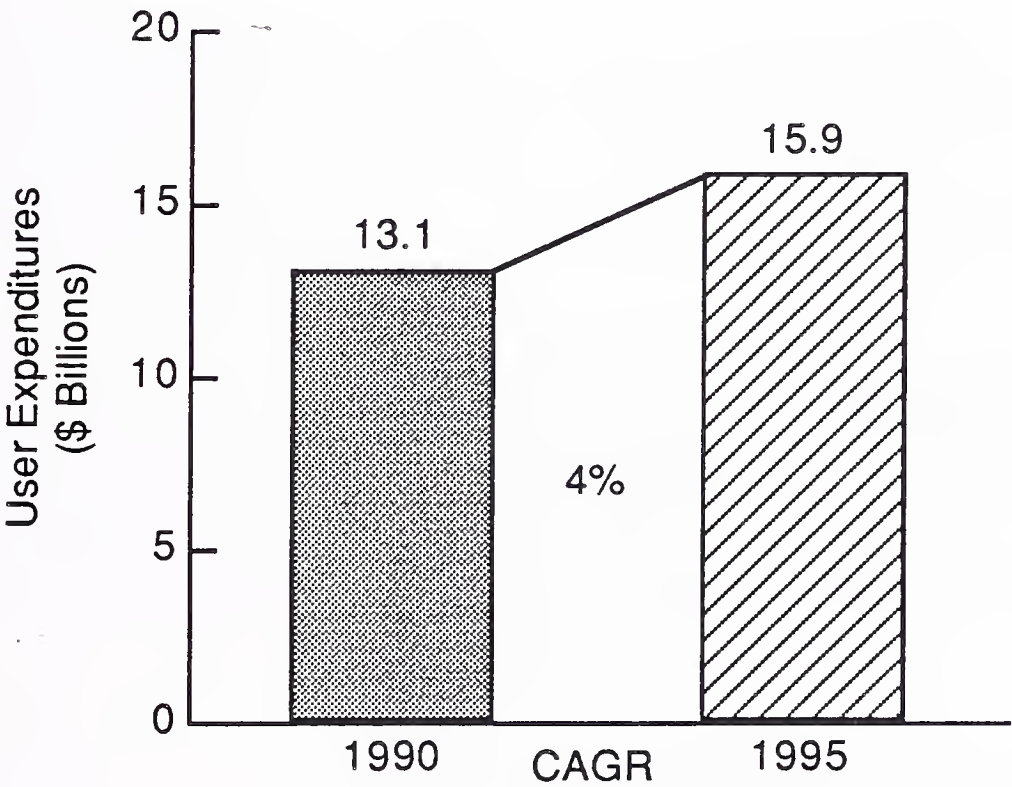
C **Declining Growth of the Hardware Maintenance Segment**

Exhibit II-10 illustrates the estimated growth of the hardware maintenance market from 1990 to 1995. Assuming a Pan-European rate of inflation of approximately 5.5% at that time, a negative growth rate will be encountered. This trend is well accepted within the industry, however, in the context of the independent maintenance market, it assumes particular importance. The independent maintenance companies have competed almost exclusively for hardware maintenance business and have developed both their technical and commercial skills within this segment of the market. Although the effect of this trend on the equipment manufacturers is considerable, they have offered alternative services such as systems software support and environmental services as part of their services portfolio. In the case of the independent sector, however, the development of alternative services provides a significant challenge.

It is predicted, therefore, that the decline of growth in the hardware maintenance market will have an increasingly important effect on the future revenue growth of the independent sector.

Exhibit II-10

**Western European Customer Services Market
Hardware Maintenance Sector Growth, 1990-1995**



D

The Development of Alternative Revenue Streams

In common with the equipment vendors, the independent maintenance sector has begun to offer a range of alternative services in order to offset the decline in their core business, a development which has proved very noteworthy during the last twelve months. Up to 80% of the independent maintenance companies surveyed in 1991 offer all or most of the services listed in Exhibit II-11.

The focus within the customer services business as a whole has increasingly focussed on the provision of "total service" and "single source maintenance" and the independent sector is adopting the same strategic approach.

However, there are two particular risks which face independent maintenance companies and which fundamentally affect the ability of the sector to compete effectively within these segments of the market. These risks are:-

- The level of competition
- The lack of a sustainable competitive advantage

1. The Level of Competition

Three sectors compete for business within the hardware maintenance market; the equipment vendors, the independent maintenance companies and the dealers and distributors. In 1991 it is estimated that the market is divided as follows:-

- Equipment Vendors - 87%
- Independent Maintenance Companies - 11%
- Dealers and Distributors - 2%

In addition to the clearly defined groups of companies competing for business, the skills required to provide hardware maintenance services are also clearly defined.

However, in the case of the alternative services the market is significantly different in two key respects:-

- Firstly, it is open to competition from a broader range of companies from the information services industry as a whole and, in the case of environmental services, from a wide range of non-computer industry vendors. Examples include Hoskyns who are among the leading suppliers of systems operations services (facilities management) or Andersen Consulting who compete for business within the software maintenance and support markets.

- Secondly, specialist skills are required to compete in these alternative markets. A key example is disaster recovery which, in addition to the obvious need to be able to make equipment platforms available requires a range of specialist skills such as risk assessment, systems software support, software recovery skills and networking capability.

2. The Lack of a Sustainable Competitive Advantage

In order to successfully gain market share within the hardware maintenance market, the independent sector has been able to offer two advantages over the equipment vendors:-

- Price
- Service Quality

However, within the specialist markets in which the independent sector is increasingly competing, it will be necessary to build a competitive edge which includes high levels of technical proficiency in addition to the ability to offer value for money and quality. Exhibit II-12 assesses the comparative skills advantages offered by the 3 competing sectors of the market against the services offered.

With the exception of Network Support, for which the possession of multi-vendor maintenance skills is a significant requirement, there is no category of service in which the independent sector can compete with a strong technical or operational advantage.

Exhibit II-11

Value Added Services The Services on Offer

- **Systems Software Support**
- **Applications Software Support**
- **Network Support**
- **Disaster Recovery**
- **Systems Operations (Facilities Management)**
- **Systems Performance Consultancy**
- **Environmental Services**

Exhibit II-12**Value Added Services -
Who Possesses the Skills?**

Service Area	Vendor Category		
	Equipment Vendor	Independent Maintainer	Professional Services Vendor
Systems Software Support	High	Low	Medium
Applications Software Support	Medium	Medium	High
Network Support	High	High	Medium
Disaster Recovery	Medium	Low	High
Systems Operations	Medium	Low	High
Systems Performance Consultancy	High	Medium	High
Environmental Services	High	Medium	Low

**E
Segmentation**

Owing to both the strength of competition and the lack of a clearly defined competitive advantage, it is concluded that one of the most significant dangers facing the independent sector is the wholesale adoption of the range of alternative services provided within the customer services market.

In order to capitalise on the strengths developed within the sector, it is recommended that a policy of diversification is adopted which utilises existing skills to provide a competitive advantage within the chosen market segment. The following 3 examples, all of which have been adopted by independent maintenance companies serve to illustrate the point:-

- **Networking Support.** One of the principal requirements for the support of networks, including the equipment attached to them, is multi-vendor maintenance capability, which is perhaps the principal technical skill offered by the independent sector. However, in addition to this specific advantage, knowledge of the principal networking products such as Novell and Banyan is comparatively well distributed across the industry and does not, therefore constitute a competitive disadvantage to the independent sector.

- The maintenance of non-current equipment. This segment potentially offers a number of significant advantages to the independent sector:
 - The market for maintenance of non-current equipment (defined as hardware which is 5 years old or greater) is estimated to be approximately \$4 billion.
 - The principal service requirement is for hardware maintenance which ideally matches the skills of an independent maintenance company.
 - INPUT's user research indicates that users of non-current equipment are dissatisfied with the quality of service they receive.
 - Equipment vendors do not currently focus on this segment of the market and the possibility exists for the development of partnership arrangements with equipment vendors to service this segment of the market.
- The maintenance of equipment embedded in capital plant. Although this segment is obviously not of significant size, it does offer the independent sector a number of opportunities:
 - Equipment embedded in large items of capital plant such as a power station for example, will remain operational for the life cycle of the total facility which will be measured in decades. It is therefore possible to enter into long-term contracts for the maintenance of such equipment with obvious benefits for both cash flow and financial planning.
 - As an item of non-current equipment, the maintenance of such equipment matches the skills of the independent sector.

F The Growth of Service Partnerships

It is predicted that the development of service partnerships will be a key factor driving the development of the customer services business during the first half of the decade. the term "service partnership" can be defined as the relationship between two or more service companies contributing to the delivery of an integrated service solution to the end user.

The factors driving the development of such partnerships can be considered as follows:-

- The demand for the single sourcing of customer services and the provision of integrated solutions.
- The increasing complexity of service products.
- The increase in competitive pressures.

1. Single Sourcing and the Provision of Integrated Solutions

Exhibit II-13 illustrates both the strength of demand for single source maintenance and the extent to which the primary equipment vendor is regarded as the preferred supplier. The matrix contained in Exhibit II-14 summarises the range of services now offered by customer services suppliers.

The customer is now demanding both a wide range of services and a single source of supply.

2. The Increasing Complexity of Service Products

In addition to the increasing range of services offered by the customer services organisations, the actual services are becoming increasingly specialised and complex.

Disaster recovery provides a good example of the extent to which high level, specialist skills are required within the market segments of the customer services business as a whole. In addition to the provision of systems platforms and the technical expertise to support them, the service requires sophisticated risk assessment skills and the supply of disaster prevention consultancy.

The use of service partnerships provides the primary contractor with the ability to offer a high quality, integrated service solution to the customer utilising the skills of specialist companies in the market.

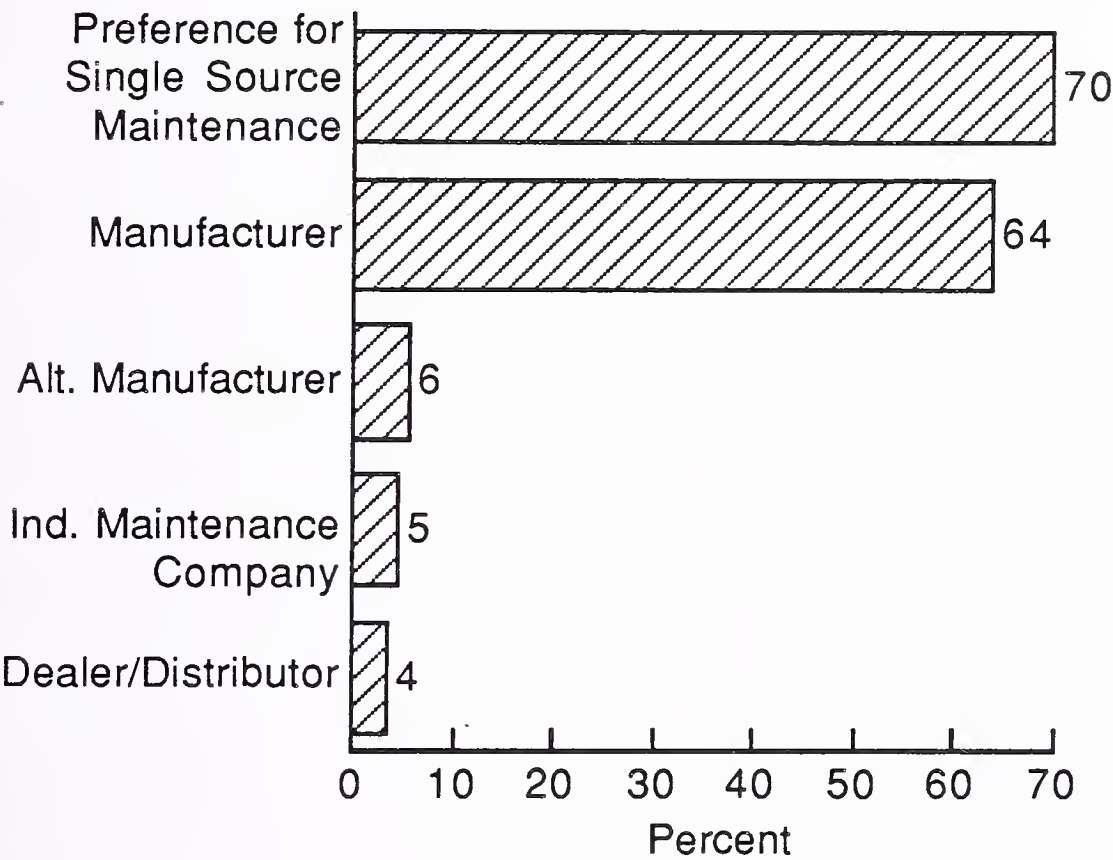
3. The Increase in Competitive Pressure

The severe pressures faced by the equipment vendors because of falling margins from both equipment sales and hardware maintenance revenues is focussing attention on the need to maximise the efficiency of service operations.

Service partnerships provide an opportunity to service vendors to outsource elements of their business to specialist providers who are able to provide a highly cost effective service. Many companies, such as Digital, have developed partnerships within their multi-vendor maintenance function. However, companies such as Sun are in the process of outsourcing the routine elements of their total hardware maintenance operation.

Exhibit II-13

User Preferences for Single-Source Maintenance
Western Europe, 1990



Source: INPUT User Survey, 1990
Notes: Sample = 1,135

Exhibit II-14**The Range of Customer Services**

Hardware Maintenance	Network Support	System Software Support
Environmental Services	Disaster Recovery	Systems Operations
Consultancy Services	Application Support	Education and Training



The Market Forecast



III The Market Forecast

This section estimates the size and growth of the Western European independent maintenance market from 1991 - 1996. The forecast has been divided into three sections as follows:

- The anticipated growth in the total market and a consideration of the degree to which the independent maintenance vendors have penetrated the overall customer services market.
- A forecast by the following market segments:-
 - Independent maintenance vendors.
 - Dealers and Distributors.
 - The multi-vendor maintenance business of the equipment vendors.
- The major Western European country markets which, for the purposes of this report are considered to be as follows:
 - France
 - Germany
 - United Kingdom
 - Italy
 - Sweden
 - The Netherlands
 - Belgium
 - Spain
 - The Rest of Europe

This section also includes a summary of the revenues of the major independent maintenance companies in each country market and contains a listing of the leading 10 independent maintenance companies in Western Europe.

A Total Market Growth, 1991-1996

The forecast for the growth of the total independent maintenance market in Western Europe for the period 1991 to 1996 is illustrated in Exhibit III-1.

Exhibit III-2 indicates the extent to which the independent maintenance vendors will continue to gain market share from the equipment vendors. This trend is forecast to continue despite the impact of two factors which potentially pose a threat to the continued expansion of the independent sector. These two factors are:

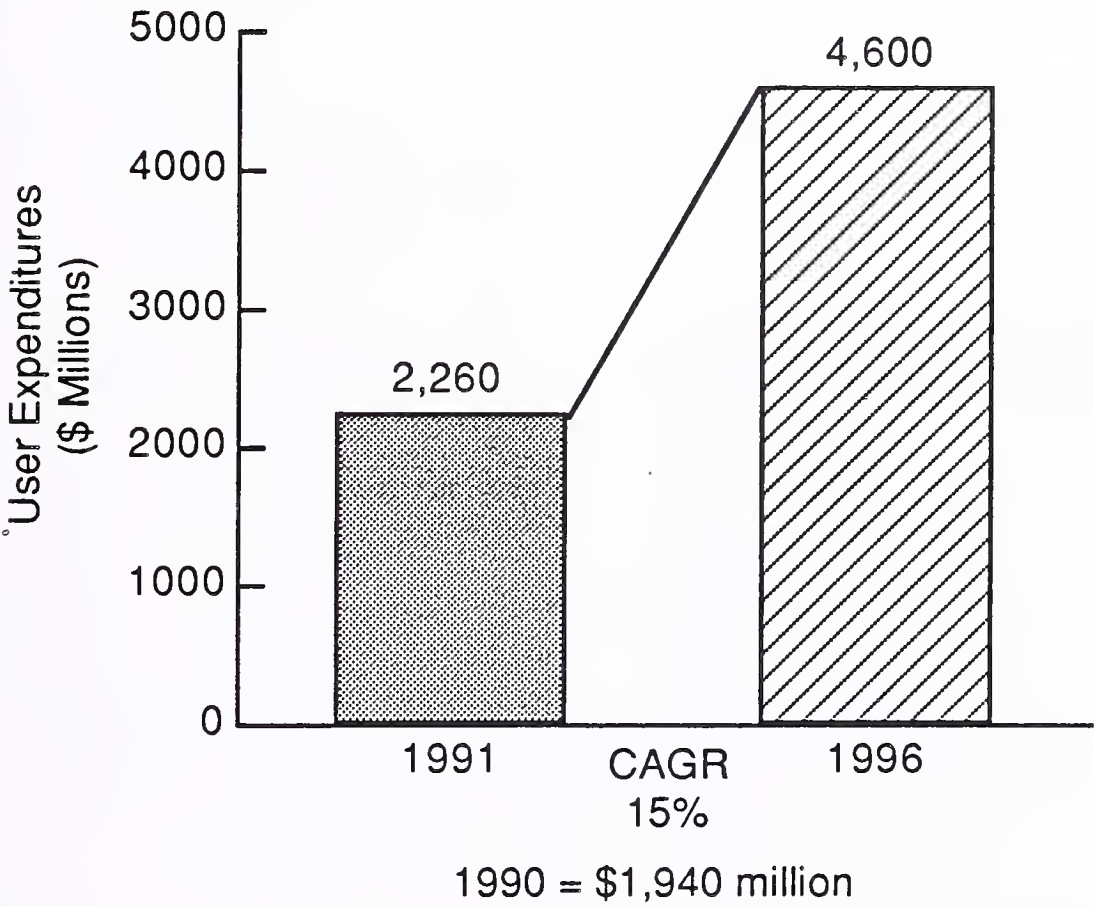
- Users strongly favour their primary equipment vendor as the primary contractor for the provision of single source maintenance. According to INPUT's 1990 Western European user survey, 70% of respondents stated a preference for single source maintenance of which over 90% favoured their primary equipment vendor as the primary contractor of the service, compared with 5% who opted for an independent maintenance company. The remainder of the sample opted for dealer support or support from one of their equipment suppliers.
- Equipment vendors are increasingly promoting a wide range of services intended to deliver a "total services solution." Such services increasingly include multi-vendor maintenance and some companies such as Digital and NCR attach a considerable degree of strategic importance to multi-vendor services

The factors driving the continued penetration of the customer services market by independent maintenance companies are as follows:-

- Although developments within the independent sector are increasingly reducing the extent to which price is aggressively used as a competitive weapon, it continues to offer independent maintenance companies a sustainable competitive advantage. In excess of 55% of users of independent maintenance who contributed to the 1990 INPUT user survey of Western Europe stated that price was the dominant factor influencing their decision. In addition to this data, a further 6% of customers of the equipment vendors have indicated that they would be prepared to consider a change of suppliers for a reduction in costs of up to 20%.
- The continued penetration of the market by the independent sector supports the assertion made by independent maintenance vendors that they supply a level of service quality and a focus on the requirements of the customer, neither of which are matched by the equipment vendors.

Exhibit III-1

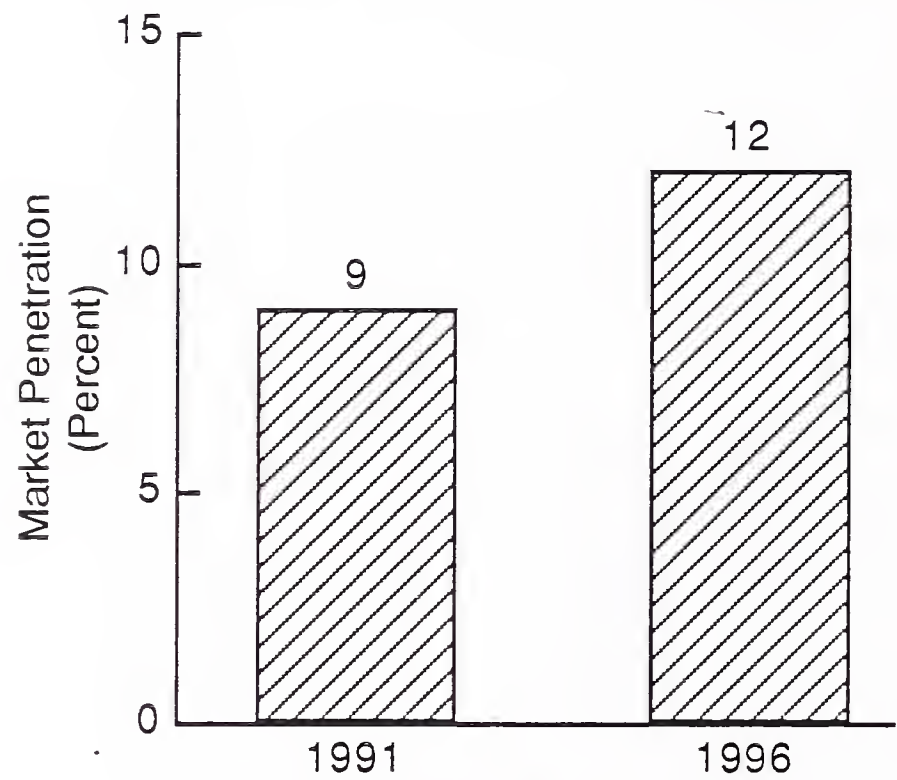
Western European Independent
Maintenance Market Growth, 1991-1996



Note: Numbers rounded

Exhibit III-2

**Independent Vendor
Penetration of Customer Services Market**



Customer Services Market Estimate
1991 = \$20.2 billion 1996 = \$29.7 billion

B

Market Forecast by Sector

Exhibit III-3 illustrates the forecast growth in three sectors of the independent maintenance market.

The independent maintenance market is divided into three sectors as follows:-

- Independent Vendors
- Dealers and Distributors
- The Multi-Vendor Maintenance Activities of the Equipment Vendors

1. Independent Vendors

The factors driving the growth of this sector of the market are the competitive advantages that were responsible for the establishment of the market throughout the 1980's.

- Competitive Pricing.
- The promotion of service quality and flexibility as key elements of the marketing plan.

As has been stated, INPUT's 1990 user survey indicates that price was the principal factor in opting for independent maintenance for 55% of respondents and that a further 6% of users currently receiving maintenance from their equipment vendors would consider changing to the independent sector for a price reduction of up to 20%.

In addition to competitive prices, the independent sector has promoted the fact that it can offer a high quality and flexible service product owing to the fact that it specialises in the service business. The combination of these two factors is seen by independent maintenance users to offer the customer better value for money than is provided by the equipment manufacturers.

Although these factors will continue to benefit the independent sector a number of significant inhibitors will have an increasing influence on the future development of the market as follows:-

- An excessive reliance by independent maintenance vendors on hardware maintenance revenues.
- Increasing competition in alternative services within the customer services market.

The skills developed by the independent sector are strongly oriented towards the hardware maintenance market which, as is commonly accepted, is showing real decline in growth. In order to compensate for this decline, the sector is currently active in increasing the range of services offered to its customers.

However, in addition to the technical barriers to entry that independent vendors face in offering services such as systems software support, the range of alternative service markets being adopted by the customer services business are open to specialist suppliers from the information services industry as a whole. The obvious example of this situation is the systems operations (facilities management) market in which the European market leaders are companies such as Hoskyns.

It is predicted that the increasing influence of these inhibiting factors will lead to a reduction in growth towards the end of the forecast period. The details relating to the impact of these developments on the market are considered in the section on the country markets.

2. Dealers and Distributors

Although there are two significant factors driving the growth of the service activities of the dealers and distributors sector, it is predicted that the inhibiting factors will restrain the growth of the sector to a CAGR of approximately 13% over the forecast period.

The major drivers are:-

- The provision of customer services provides higher margins than the sale of hardware.
- A number of companies are both significant dealers and independent maintenance companies. Such companies are able to exploit captive maintenance revenues. Econocom in Belgium provides an example of such a company.

However, these factors are countered by two significant market inhibitors:-

- It is estimated that up to about 50% of dealers' end user servicing requirements are provided by independent maintenance vendors and a smaller percentage provided by the equipment manufacturer. Although there is a realisation that this proportion might reduce, it is anticipated that the vendors will be unwilling to forgo the margins offered by this business and therefore compete aggressively
- Within the dealers and distributors market, there are comparatively few suppliers possessing the resources necessary to invest in a customer services operation.

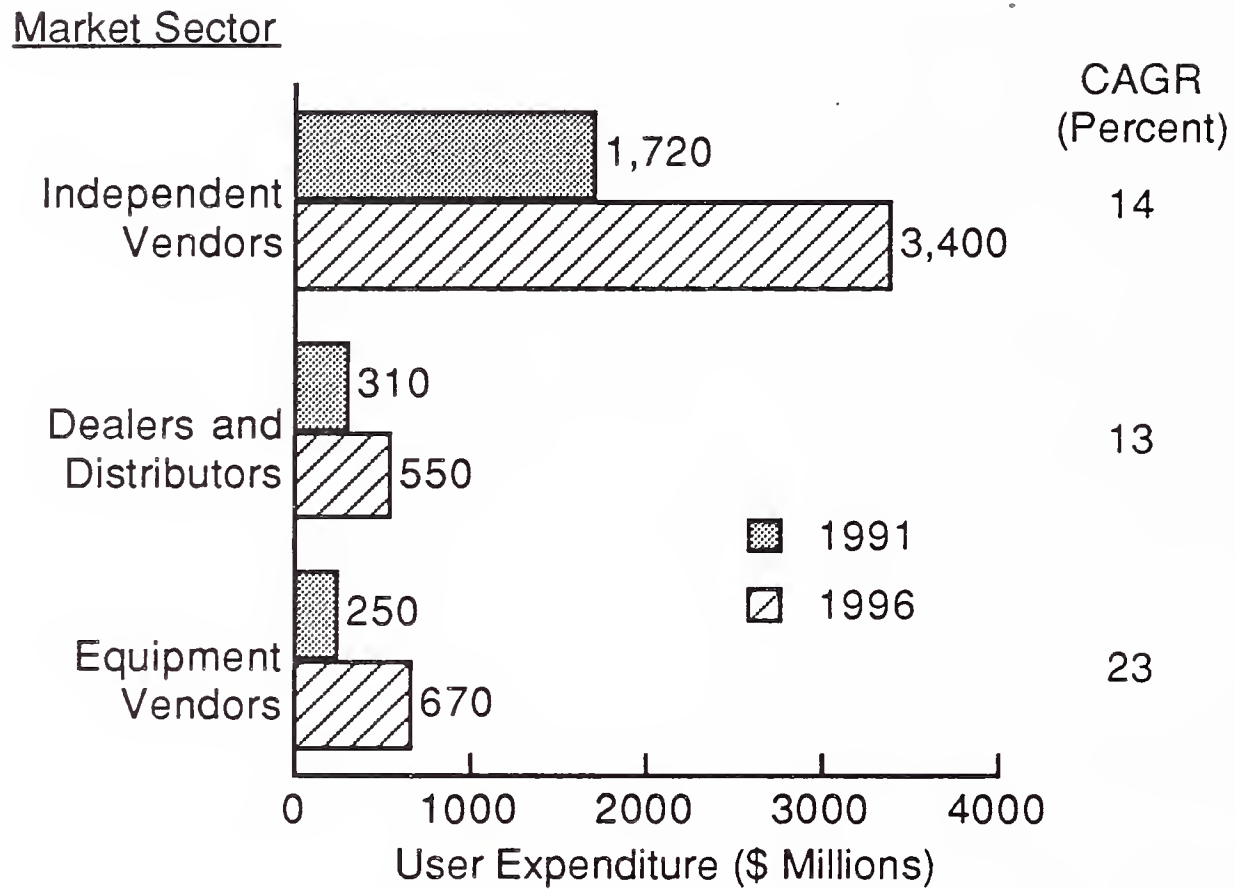
3. Multi-Vendor Maintenance

Relatively substantial growth is forecast for the multi-vendor maintenance activities of the equipment manufacturers. Although currently the multi-vendor maintenance activities of the equipment vendors only accounts for approximately 1% of the total customer services market, it should be noted that, in some country markets, multi-vendor maintenance now accounts for up to 10% of the customer service revenues of particular companies. Examples include Digital in the UK and NCR in Switzerland. Two factors are driving the growth in the multi-vendor maintenance activity:-

- Most major equipment suppliers now offer multi-vendor maintenance as part of their customer services package. The principal factor driving this development is customer demand for single source maintenance. Most companies have therefore followed the approach adopted by Hewlett Packard and IBM and offer the service to their existing customer base in order to meet demand.
- However, companies such as Olivetti, NCR and Norsk Data regard multi-vendor maintenance as a strategic business opportunity and are actively attacking the open market. A number of other companies, of which Digital is the primary example, have not ruled out the possibility of expanding multi-vendor maintenance services beyond their own customer base in future.

Exhibit III-3

Western European Independent Maintenance Market by Sector 1991-1996



1990 = \$1,940 million

Note: Numbers rounded

C Market Forecast by Country Market

Exhibit III-4 provides an overview of the estimated size and growth of independent maintenance in the principal Western European country markets converted from local currency into US dollars. Exhibit II-5 provides the market forecast converted from local currency into ECU's. Exhibit III-6 lists the top ten Western European independent maintenance companies by revenue. The detailed data relating to each market together with a summary of the principal companies are contained in Exhibits III-7 to III-22 for the following country markets:-

- France
- Germany
- The United Kingdom
- Italy
- Sweden
- The Netherlands
- Belgium
- Spain

It is predicted that the most significant issue affecting the Western European independent maintenance market over the period of the forecast will be the onset of the early stages of maturity, through the influence of two factors:-

- The major companies within the sector are changing their strategic emphasis from the pursuit of growth to an increased concentration on profitability and the effective utilisation of assets. Granada, for example, has recorded a loss of 700,000 for the six months to April 1991 but has taken action to terminate low margin contracts and has employed a logistics director to increase the management focus on the company's logistics operation.
- The independent sector will face significantly increased competition within the customer services market both from the equipment vendors promoting multi-vendor maintenance services and from companies within the overall information services industry competing in markets such as disaster recovery and systems operations (facilities management).

Within this overall scenario there will, however, continue to be significant differences between the country markets. The principal variation will be the timescale over which the various markets move into the mature phase.

- France and the UK are the two most developed markets in Europe and it is anticipated that the slowdown in growth experienced in both countries in 1990 will continue. It should be noted that a major factor affecting the UK market will be the future development of Granada Computer Services which is currently undergoing a period of considerable uncertainty.
- Belgium, Italy and the Netherlands will move into maturity towards the end of the period but are continuing to grow relatively strongly at present.
- The major exceptions to the trend are provided by Spain and Germany. The Spanish market continues to show a rate of growth that is considerably larger than the rest of Europe and is driven by the rapid expansion of the total Spanish economy and by the nature of the country's geography in which benefits such as local service and flexibility are particularly important. Although German users have expressed dissatisfaction with the prices they pay for service (8% of users claim that they would consider changing to an independent maintenance company for a discount of up to 20%), the cultural expectation that service will be provided by the equipment vendor and the lack of a well developed independent maintenance market will continue to inhibit development.

Exhibit III-4

Independent Maintenance Market Forecast - Western Europe 1991 - 1996 (US Dollars)

\$ Millions					
Country Market	1990	1991	Growth 1990 - 1991 (Percent)	1996	CAGR 1991 - 1996 (Percent)
France	375	430	15	820	14
Germany	195	225	15	430	14
United Kingdom	695	800	15	1470	13
Italy	160	195	19	440	18
Sweden	70	75	9	115	9
Netherlands	145	165	15	335	15
Belgium	55	65	18	140	17
Spain	110	155	40	560	30
Rest of Europe	140	160	14	300	13
TOTAL (ROUNDED)	1940	2260	16	4600	15

Exhibit III-5

Independent Maintenance Market Forecast -
Western Europe 1991 - 1996 (ECU's)

ECU Millions					
Country Market	1990	1991	Growth 1990- 1991 (Percent)	1996	CAGR 1991- 1996 (Percent)
France	275	315	15	695	14
Germany	140	165	15	315	14
United Kingdom	505	580	15	1080	13
Italy	120	140	19	320	18
Sweden	50	55	9	85	9
Netherlands	105	120	15	240	15
Belgium	40	45	18	100	17
Spain	80	110	40	405	30
Rest of Europe	100	115	14	220	13
TOTAL (ROUNDED)	1410	1650	16	3350	15

Exhibit III-6

**The Independent Maintenance Market
The Top 10 Vendors**

Company	1990 Revenues (\$ Millions)	Independent Sector Market Share (Percent)
Granada	316	16
Thomainfor	145	8
Sorbus	74	4
Getronics	71	4
Spectral/MIS	51	3
Ibimaint	45	2.5
Telub	41	2
Metroservice	33	2
CGEE	31	1.5
Eltec	29	1.5

Exhibit III-7

Independent Maintenance Market Forecast - France 1991 - 1996

	FF Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	1815	2080	2400	2700	3050	3400	3800	13
Dealers & Distributors	200	220	240	270	300	330	370	11
Equipment Vendors	100	130	170	230	310	380	450	28
TOTAL (Rounded)	2115	2430	2800	3200	3650	4100	4600	14
Annual Growth (%)		15	15	14	14	13	12	

Exhibit III-8

Leading Independent Maintenance Vendors
France

Company	1990 Revenues (FF Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Thomainfor	648	823	50	50
Spectral/MIS	286	220	60	-
Metroservice	185	205	24	-
CGEE	174	285	29	30
Granada	160	152	25	22

Exhibit III-9

Independent Maintenance Market Forecast -
Germany 1991 - 1996

	DM Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	175	205	240	275	315	365	415	15
Dealers & Distributors	140	160	180	200	230	250	280	12
Equipment Vendors	9	10	12	14	18	23	28	23
TOTAL (Rounded)	324	375	430	490	560	640	720	14
Annual Growth (%)		15	15	14	14	14	13	

Exhibit III-10

Leading Independent Maintenance Vendors
Germany

Company	1990 Revenues (DM Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Granada	33	125	24	16
Sorbus	33	120	16	-
Thomainfor	18	50	10	4
Telub Bitronic	11	60	6	-
Areatech	10	75	9	-
Multitech	7	30	11	2

Exhibit III-11

Independent Maintenance Market Forecast -
United Kingdom 1991 - 1996

	Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	270	310	350	400	450	500	560	13
Dealers & Distributors	22	25	30	35	40	45	50	15
Equipment Vendors	65	75	90	105	120	135	150	15
TOTAL (Rounded)	357	410	470	540	610	680	760	13
Annual Growth (%)		15	15	14	13	12	11	

Note: Bell Atlantic Customer Services International a new company formed in July 1991 as a result of a joint venture between ICL and Bell Atlantic remains in the independent vendor sector. This positioning is the same as that afforded to Ibimaint in Italy which is 100% owned by Olivetti.

Exhibit III-12

Leading Independent Maintenance Vendors
United Kingdom

Company	1990 Revenues (Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Granada	113	1420	35	55
ACT	24	400	11	34
Computeraid	19	280	12	22
Sorbus	16	280	7	-
Servicetec	15	220	12	13

Exhibit III-13

Independent Maintenance Market Forecast -
Italy 1991 - 1996

	Lira Billions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	140	165	195	225	260	300	340	16
Dealers & Distributors	55	65	75	90	105	115	125	14
Equipment Vendors	5	8	15	25	40	55	75	55
TOTAL (Rounded)	200	240	285	340	400	470	540	18
Annual Growth (%)		19	19	19	18	17	15	

Exhibit III-14

Leading Independent Maintenance Vendors
Italy

Company	1990 Revenues (L Billions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Ibimaint	55	310	30	100
Ciesse	18	100	16	32
Sorbus	7	60	10	-
Granada	7	31	4	4

Exhibit III-15

Independent Maintenance Market Forecast -
Sweden 1991 - 1996

	SK Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	270	290	310	330	350	370	390	6
Dealers & Distributors	110	120	132	145	160	170	180	8
Equipment Vendors	5	8	13	21	35	54	80	58
TOTAL (Rounded)	385	420	455	495	550	590	650	9
Annual Growth (%)		9	9	9	10	9	9	

Exhibit III-16

Leading Independent Maintenance Vendors
Sweden

Company	1990 Revenues (SK Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Telub	125	130	18	20
3C	80	100	29	-
Granada	21	17	3	2

Exhibit III-17

Independent Maintenance Market Forecast -
Netherlands 1991 - 1996

	DFL Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	225	255	290	330	370	415	460	13
Dealers & Distributors	17	19	21	24	27	30	33	12
Equipment Vendors	3	6	11	20	35	50	70	65
TOTAL (Rounded)	245	280	320	375	430	490	560	15
Annual Growth (%)		15	15	15	14	14	13	

Exhibit III-18**Leading Independent Maintenance Vendors
Netherlands**

Company	1990 Revenues (DFL Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Getronics	102	516	9	13
KH Services	30	100	4	10
Granada	27	85	1	7
Thijssen	18	43	1	5
Econocom	16	60	5	-

Exhibit III-19**Independent Maintenance Market Forecast -
Belgium 1991 - 1996**

	BF Millions							
CAGR %		1990	1991	1992	1993	1994	1995	1996
Independent Maintenance Vendors	1460	1700	1980	2280	2600	2900	3250	14
Dealers & Distributors	275	310	355	405	460	525	600	14
Equipment Vendors	120	200	320	480	700	850	950	35
TOTAL (Rounded)	1855	2200	2600	3000	3500	4100	4700	17
Annual Growth (%)	NA	18	18	17	17	16	15	NA

Exhibit III-20

**Leading Independent Maintenance Vendors
Belgium**

Company	1990 Revenues (BF Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Econocom	480	50	5	25
Granada	420	70	2	6
Getronics	260	68	4	5
Thijssen	122	15	2	4

Exhibit III-21

**Leading Independent Maintenance Vendors
Spain 1991 - 1996**

	BF Millions							
	1990	1991	1992	1993	1994	1995	1996	CAGR %
Independent Maintenance Vendors	7945	11450	15500	20800	26800	34300	42000	30
Dealers & Distributors	945	1100	1300	1500	1750	2000	2200	15
Equipment Vendors	1500	2000	2750	3700	5000	6700	9000	35
TOTAL (Rounded)	10390	14500	19600	26000	33500	43000	53000	30
Annual Growth (%)		40	35	32	30	28	25	

Exhibit III-22**Leading Independent Maintenance Vendors
Spain**

Company	1990 Revenues (PTA Millions)	Number of Engineers	Number of Service Centres	Number of Sales Personnel
Eltec	2800	250	30	12
Sintec	1500	130	30	12
Granada	1300	85	12	6



The Threats to Independent Maintenance



IV The Threats to Independent Maintenance

The purpose of this section is to discuss the principal issues affecting the traditional remedial maintenance markets of the independent maintenance companies and the issues that confront them in alternative markets, which can be considered as follows:-

- Declining growth in the hardware maintenance market.
- Pricing.
- The search for alternative sources of revenue growth.

A

Declining Growth in the Hardware Maintenance Market

The forecast for growth in the hardware maintenance market is compared with the growth forecast for the non-maintenance areas of the customer services market in Exhibit IV-1. The hardware maintenance market is growing at 4% CAGR compared with about 20% CAGR overall for the non-maintenance markets. The compound annual growth rate of 4% in the hardware maintenance sector represents a real decline, as this estimate includes a Western European inflation allowance of 5.5%, of 1.5% by 1995.

The factors contributing to this decline are well understood within the industry and can be summarised as follows:-

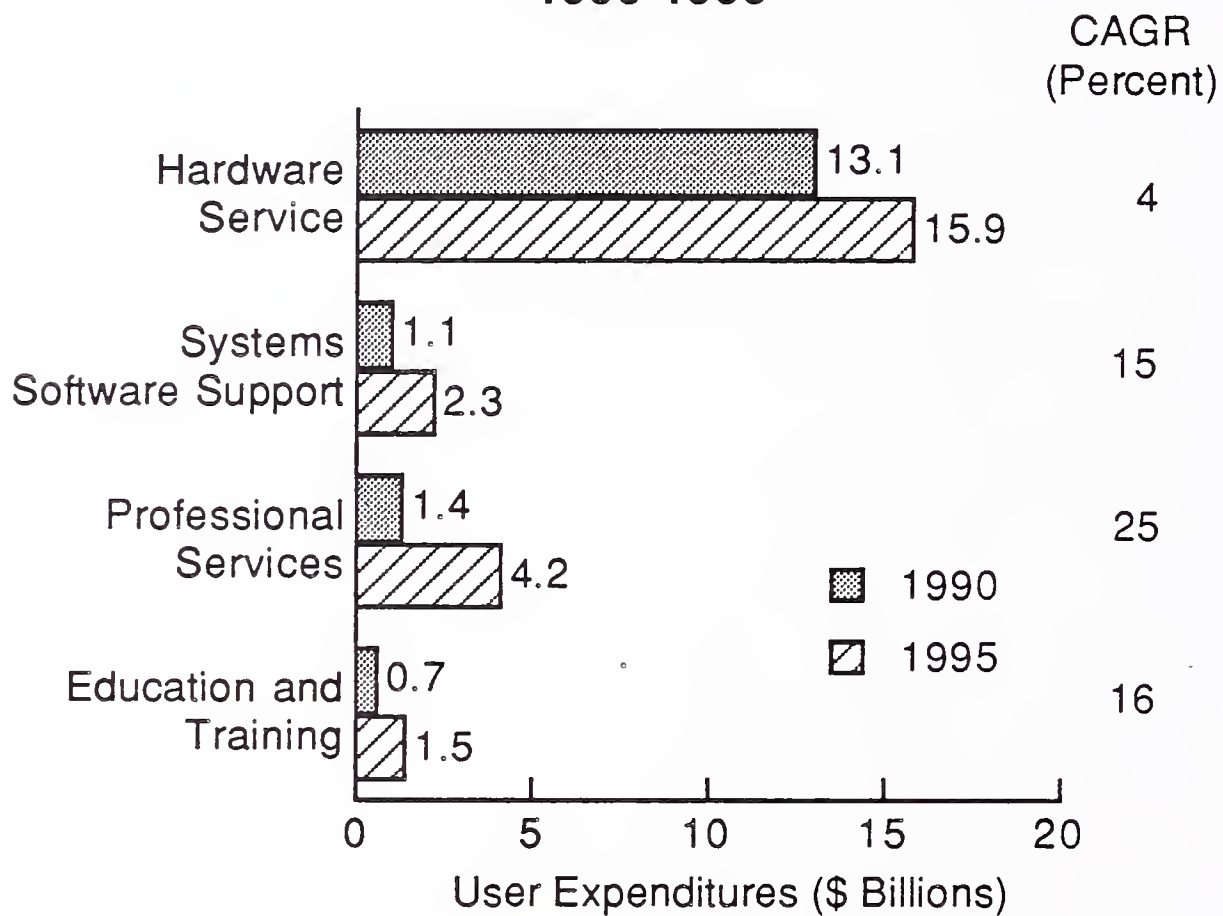
- The increasing reliability of equipment.
- The falling price of hardware leading to pressure to reduce the associated maintenance charge.

Although the prospect of falling growth in this sector of the market is of concern to the customer services business as a whole, it is particularly so for the independent maintenance sector, which has grown almost exclusively through competing effectively for hardware maintenance business. It is predicted that the share of the overall Western European customer services market held by the independent sector will grow from an estimated 8% in 1990 to as much as 12% by 1996. There is little doubt that the vast majority of this increasing share will be derived from the hardware maintenance segment of the market, typically about 95% of independent maintenance revenues are derived from this sector and the vendors indicate little substantial success in other sectors so far.

One of the key problems therefore facing the independent maintenance companies is that their key competitive skills have been developed to compete in what is now a declining market. The necessity to diversify into alternative sources of revenue presents a very significant challenge.

Exhibit IV-1

Western Europe Customer Services Market—Service Sector Growth 1990-1995



B The Pricing Issue

The factors that influence users to choose independent maintenance in preference to the service offered by their equipment vendors are analysed in Exhibit IV-2. Although factors such as the quality of support and the flexibility of the contract are of significant importance to the customer and may play a very significant role in retaining the business of existing users, it is clear that price competition is the single most important factor influencing the decision.

Exhibit IV - 2

The Reasons for Using Independent Maintenance Western Europe, 1990

	Reason for Using Independent Maintenance (Percent)					
	Lower Cost	Local Service	Single Source	Quality	Flexible Contract	Other
Belgium	67	33	0	0	0	0
France	38	23	8	38	15	0
Germany	75	25	0	0	50	0
Holland	63	50	0	0	63	13
Italy	50	29	0	0	7	64
Norway	33	17	17	33	17	50
Spain	62	47	0	8	38	0
Sweden	67	33	0	33	0	0
Switzerland	67	33	0	33	17	17
U.K.	60	16	16	40	16	20
Western Europe	56	28	6	22	22	15

Sample = 95

Multiple Responses Allowed

Source of data: INPUT 1990 user survey

The importance assigned to this issue by the customer is one of the key reasons which has driven many independent companies to view price competition as their principal competitive weapon. It is generally accepted that equipment vendors have a significantly higher cost base to support than the independent companies who are therefore able to exploit a pricing advantage.

However the inevitable tendency of price competition to force down the level of prices has led to the tendency to pursue volume at the expense of profit. Granada Business Services Division, for example, has reported a 700,000 (\$1.35 Million) loss for the 6 months to April 1991. The recent decision by Granada Computer Services to terminate approximately 1,200 small, low margin, contracts is an important example of the extent to which this tactic has been used in the sector as a whole.

In addition to the obvious risks inherent in maintaining inadequate margins, a further factor, resulting from the effect of acquisitions, will prove to be of key importance in changing the emphasis from revenue growth to profitability.

The growth of the independent maintenance sector has been characterised by the use of aggressive acquisition strategies adopted by the principal companies in the market. The moulding of a number of disparate companies into a coherent whole involves the management of a very significant administrative and organisational change. This process has obvious implications in terms of cost and provides an obvious incentive to increase margins.

Although the lower cost structure of the independent sector will continue to provide the ability to compete effectively on price, the pressure on margins exerted by the factors discussed will lead to an inevitable reduction in the strength and sustainability of this competitive advantage.

C **The Search for Competitive Alternatives**

The tactics being employed by independent maintenance companies to address the issues of price and declining hardware maintenance revenue growth are subject to risk. This section will consider the risks and threats inherent in the services being adopted by the sector in response to the decline of hardware maintenance. These threats constitute a new and potentially more significant concern to the independent sector and require detailed consideration.

Of the 22 independent maintenance companies surveyed during the course of this study, in excess of 80% offer all or most of the following services:-

- Systems Software Support
- Applications Software Support
- Network Support
- Disaster Recovery
- Systems Operations (Facilities Management)
- Systems Performance Consultancy
- Environmental Services

It is clear that, in common with the equipment vendors, the independent sector regards the ability to provide such services as a key factor. However, unlike the hardware maintenance activity during the earlier development phases, the markets for all these services are characterised by two factors:-

- A high degree of competition from software and services vendors
- No apparent basis by which the independent maintenance companies can provide a competitive advantage as leverage.

In addition to these factors, the significant move into multi-vendor maintenance made by the equipment vendors during the course of 1990 provides a significant challenge to the position of independent vendors within the traditional hardware maintenance market.

1. The Threat from Multi-Vendor Maintenance

Real evidence now exists that the predicted move of the equipment vendors into multi-vendor maintenance is now beginning to occur at a significant level. The majority of the major manufacturers now offer the ability to service a range of manufacturers equipment and a number of very significant contracts are being won. Examples include the maintenance of the network of ATM's awarded to Olivetti by Barclays Bank and the contract for the maintenance of equipment located in MacDonalds fast-food restaurants located in Southern England which was won by Unisys.

It is currently possible to identify two strategic categories driving the move to multi-vendor maintenance:-

- *The Expansionist Approach.* This is the approach being adopted by vendors who have identified a major opportunity in the market and are actively pursuing the market in order to establish multi-vendor maintenance as a major element within their services portfolio. It is characterised by:-
 - The development of multi-vendor maintenance as a strategic business in it's own right as opposed to regarding it as an activity supporting core strategies.
 - The pursuit of contracts from customers who are not users of the vendors own equipment. This tactic marks a decisive move by equipment vendors into pure third party maintenance.

Currently, the principal example of this approach is Olivetti. However, the recent joint venture agreed between Norsk Data and Thomainfor is a second example of an equipment vendor that has chosen to adopt the aggressive approach. It is interesting to note that Norsk was able to win a sizeable independent maintenance contract with a major user within the UK public sector very shortly after entering the market. The company's prospect list of multi-vendor maintenance business is considerably larger than it's potential equipment sales. NCR is a company which places considerable strategic value on the development of a multi-vendor maintenance business

- *The Supportive Approach.* Up to comparatively recently, multi-vendor maintenance was offered by equipment vendors in pursuit of specific tactical goals, such as the winning of a large contract for equipment or in order to retain important service contracts. The principal motivation behind the development of multi-vendor maintenance was, therefore, to defend elements of the core business and was not regarded as a strategically important product in it's own right.

The adoption by the majority of manufacturers of multi-vendor maintenance can be attributed to this motive. However, it is a strategy which has also been adopted by VAR's such as Harris-Adacom in France. One of the specialist markets served by this company is the printing industry. Currently 7% of it's revenues come from multi-vendor service contracts which will be offered either at the request of existing customers or because they provide a means of gaining access to a potential customer within it's market niche.

A second example of a company offering independent maintenance, from outside both the independent sector and the equipment vendor sector is Software Engineering. The core businesses of the organisation are systems integration and consultancy but up to 30% of the company's business is independent maintenance which is regarded as a strategically valid element of the company's ability to provide integrated solutions.

Perhaps the strongest driver behind the adoption of a multi-vendor maintenance product by equipment suppliers is the demand for such a service within the user community. Exhibit IV-3 indicates the high level of demand that exists for single source maintenance and, perhaps more importantly, the degree to which the primary equipment supplier is regarded as the preferred source of single source maintenance.

It is clear that the demand for single source maintenance is high and the evidence strongly suggests that it is the equipment vendors who are placed to gain maximum advantage.

Exhibit IV - 3

Analysis of User Preferences for Single Source Maintenance - Western Europe, 1990

			Preferred Supplier (Percent)			
	Sample Size	Preference for Single Source (Percent)	Manu- facturer	Dealer	TPM	Alt. Manu- facturer
Belgium	46	78	72	4	4	0
France	145	86	77	2	6	1
Germany	154	60	55	1	5	1
Holland	87	57	52	3	5	10
Italy	118	71	75	8	7	0
Norway	24	71	54	4	8	4
Spain	90	86	87	3	1	2
Sweden	82	78	59	10	7	11
Switzerland	91	70	69	2	2	1
U.K.	298	60	52	3	4	16
Western Europe	1,135	70	64	4	5	6

Source of data: INPUT 1990 user survey

2. The competition for alternative sources of revenue growth

The key issue characterising the development of alternative service products is that they represent a blurring of the boundaries between customer services and information systems services. In order to compete effectively in the markets being attacked by both the equipment vendors and the independent sector, a wide range of skills are required to establish a level of credibility including:-

- Software maintenance and support skills.
- Networking hardware and software support skills.
- Systems operations skills.
- A range of skills required to compete in specialist markets.

The principal problem facing the independent sector is not that it does not possess or cannot acquire the required skills but that there is no apparent source of competitive advantage which can be applied against either the equipment vendors or the independent software and services suppliers in a highly competitive marketplace.

Exhibit IV-4 indicates the extent to which the skills set possessed by each of the three competing sectors matches the requirements of the service being offered. The principal conclusion to be drawn from the table is that the independent sector does not possess a clearly defined skills advantage in any of the alternative service markets in which it is competing.

The key problem facing the independent maintenance company in competing for business within these segments of the market is that the skills advantage is either derived from proprietary knowledge which will favour the equipment vendor or from software development and maintenance skills which are possessed by the software and services vendor.

Exhibit IV - 4**Value-Added Services - Who Possesses the Skills?**

Service Area	Vendor Category		
	Equipment Vendor	Independent Maintainer	Independent Software and Services Vendor
Systems Software Support	High	Low	Medium
Applications Software Support	Medium	Medium	High
Network Support	High	High	Medium
Disaster Recovery	Medium	Low	High
Systems Operations	Medium	Low	High
Systems Performance Consultancy	High	Medium	High
Environmental Services	High	Medium	Low



Strategic Opportunities

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V Strategic Opportunities

The purpose of this section is to highlight particular issues within the customer services market which offer the independent sector substantial business opportunities. The areas covered by the paper are as follows:-

- The pricing issue.
- The development of market niches.
- The growth of the concept of "service partnerships."

A The Pricing Issue

In the environment that currently exists within the customer services market, equipment vendors are tending to adopt a position of entrenchment. The reason for this defensive or protectionist posture is due to a number of market forces that are creating pressure on revenues and margins :-

- Equipment vendors are heavily dependent on equipment maintenance for between 75% and 80% of customer services revenues.
- Growth of the customer services market has slowed appreciably in the last three years, from about 16% annual growth prior to 1987, to the current level of about 8% (including inflation).
- Growth of the equipment maintenance sector of the customer services market has slowed to below inflation levels and is indicating future decline in terms of absolute size.
- Competitive pressure, and pressure from users, is forcing service prices downwards.

Against this background of economic decline in the customer services market, equipment vendors in the medium term are concerned primarily with protecting existing revenue bases. These conditions have created a need to balance revenue and margin requirements with the need to remain competitive.

Exhibit V-1 highlights the risk to equipment vendor maintenance revenues from further market penetration by independent maintenance companies.

Overall, about 6% of users state a willingness to change to independent maintenance for a price reduction of between 0% and 20%. Willingness among users to change for a price reduction of less than 20% should be considered high risk. In the event that a further 6% of users' maintenance business in Western Europe is captured by independent maintenance companies, this would result in a further loss of almost \$1 billion of maintenance revenues to equipment vendors.

Users requiring a price reduction of between 21% and 30% to consider a change of maintenance vendor are considered to be medium/low risk.

A further factor of risk is considered to be the relatively high percentage of users in the don't know/uncertain category, about 14% overall in Western Europe. These users should be considered as what would in political terms be the "floating voters".

Exhibit V - 1

Threat of Independent Maintenance Western Europe Overall

System Range	Users Willing to Change (Percent)				
	----- Price Discount Level (Percent)				
		0-10	11-20	21-30	No Real intent Don't Know/Uncertain
Large systems	2	4	20	66	8
Medium systems	1	6	14	68	11
Small systems	0	5	18	54	23

Sample size: 732

Standard error: 0.2

Source of data: INPUT 1990 User Survey

1. Country Markets

Exhibit V-2 highlights the risk to equipment vendor maintenance revenues from further market penetration by independent maintenance companies in seven Western Europe Country markets.

Country markets considered to be at high risk from further market penetration by independent maintenance companies are as follows :-

- France and Italy: where about 7% of users would be willing to change to independent maintenance for a price reduction between 0% and 20%.
- Spain: where about 9% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%.

Germany, is not considered a high risk market at present. Even though about 8% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%, independent maintenance in Germany is not a sufficiently well developed market to support a change of this magnitude. In Germany, there are estimated to be only four independent maintenance companies with revenues of more than \$5 million and both are relatively small operations. However, equipment vendors are warned that this indication of user willingness could influence further development of the market.

Country markets considered to be of lower risk to further market penetration by independent maintenance companies are as follows :-

- Benelux, Norway and Sweden, and the United Kingdom: where a maximum of about 5% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%
- The lower risk factor indicated for the UK market may well be a sign that the market in the UK is approaching maturity. The UK represents the most developed independent maintenance market in Western Europe.

Exhibit V - 2

Threat of Independent Maintenance Country Markets

Country Market	Users Willing to Change (Percent)				
	----- Price Discount Level (Percent)				
		0-10	11-20	21-30	No Real intent Don't Know/Uncertain
Benelux	0	3	8	81	8
France	2	5	24	50	19
Germany	0	8	8	78	6
Italy	2	5	19	55	19
Norway and Sweden	0	5	15	63	17
Spain	0	9	30	38	23
United Kingdom	1	3	8	78	10

Sample size: 732

Standard error: 0.2

Source of data: INPUT 1990 User Survey

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2. Industry Sectors

Exhibit V-3 highlights the risk to equipment vendor maintenance revenues from further market penetration by independent maintenance companies in seven industry sectors.

Industry sectors considered to be at high risk from further market penetration by independent maintenance companies are as follows :-

- The Government and Public Utilities sector represents a relatively high risk. About 12% of users would be willing to change to independent maintenance for a price reduction between 0% and 20%.
- The manufacturing sector: where about 9% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%.

One industry sector considered to be a lower risk from further penetration by independent maintenance companies is the services sector. In this sector, only 2% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%.

Exhibit V - 3

Threat of Independent Maintenance Industry Sectors

Industry Sector	Users Willing to Change (Percent)				
	Price Discount Level (Percent)				
		0-10	11-20	21-30	No Real intent Don't Know/Uncertain
Manufacturing	.5	9	16	61	13.5
Distribution	0	6	18	63	13
Transportation	0	4	8	58	30
Government and Public Utilities	9	3	24	64	0
Banking and Finance	2	5	15	63	15
Insurance	0	5	26	58	11
Services	0	2	17	65	16

Sample size: 732

Standard error: 0.2

Source of data: INPUT 1990 User Survey

3. Installed Base

Exhibit V-4 highlights the risk to specific vendors installed base from further market penetration by independent maintenance companies.

Vendors whose installed base is considered to be at high risk from further market penetration by independent maintenance companies are as follows :-

- Bull: where about 9% of users would be willing to change to independent maintenance for a price reduction between 0% and 20%, with almost half of these willing to change for a much lower price reduction.
- Digital: where about 8% of users would be willing to change to independent maintenance for a price reduction between 11% and 20%.

Vendors whose installed base is considered to be at very low risk from further penetration by independent maintenance companies are Hewlett Packard, ICL and NCR, where a price reduction of over 20% would be required to persuade users to change to independent maintenance.

It is clear from this data that the issue of price will continue to offer considerable opportunities to the independent sector. Indeed, if only half of the 6% of the customer base who are dissatisfied with the prices being levied by their equipment manufacturers migrate to an independent maintenance company, the independent sector would achieve a market share of 11%.

B The Development of Market Niches

A number of possible niche markets can be identified which offer opportunities for existing independent maintenance vendors to use their existing service skills to establish competitive advantage.

Examples include the maintenance of computer equipment which forms an integral part of a multi-million dollar capital project such as a power station. Such major items of capital expenditure have an expected life-cycle of 20 years or greater and offer the prospect of long term contracts for the maintenance of the imbedded data-processing equipment.

A second example is provided by Granada Computer Services which provided a maintenance management service to the University of Madrid encompassing services such as equipment inventory control in addition to hardware maintenance.

However, the niches which offer the greatest opportunity to the independent sector can be considered as follows:-

- The maintenance of non-current equipment.
- The segments created by the technology life-cycle.

Exhibit V - 4**Threat of Independent Maintenance
Vendor Installed Base**

Vendor Installed Base	Users Willing to Change (Percent)				
	----- Price Discount Level (Percent)				
		0-10	11-20	21-30	No Real intent Don't Know/Uncertain
Bull	4	5	25	61	5
Digital	0	8	13	64	15
Hewlett-Packard	0	2	22	59	17
IBM	.5	4.5	14	44	37
ICL	0	0	22	74	4
NCR	0	0	17	78	5
Unisys	0	6	14	75	5

Sample size: 732

Standard error: 0.2

Source of data: INPUT 1990 User Survey

1. The Maintenance of Non-Current Equipment

The servicing of equipment which is not part of a manufacturers current product range is one area of the market in which the independent sector has been willing to do business. One example of this factor is provided by CRC, a 4 million turnover UK company which took on the maintenance of an obsolete range of ICL CAD/CAM equipment. For the purposes of this paper the term "non-current equipment" is defined as hardware which is over five years old.

However, this sector of the market has not been specifically targeted to any significant extent, yet there are firm indications that it provides some very significant opportunities for the independent maintenance market which can be summarised as follows:-

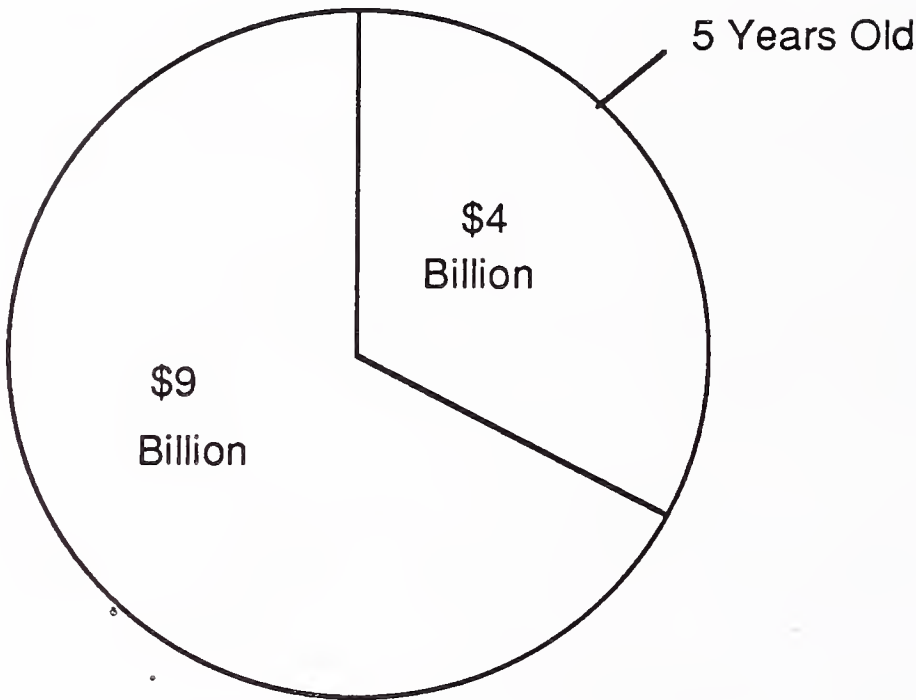
- The installed base of equipment which is five years old or greater is estimated to constitute approximately 30% of the total Western European hardware maintenance market. Exhibit V-5 illustrates the estimated value of the sector which is considered to be approximately \$4 billion in 1990.

- Equipment vendors do not focus on the non-current segment. In most cases, the major equipment manufacturers can only put a very approximate value on their non-current equipment maintenance base.
- The poor quality of service experienced by users of non-current equipment is frequently commented upon by respondents to INPUT's user surveys. Exhibit V-6 provides a brief compilation of some of the comments made by users on the issue of the support of non-current equipment.
- The segment can be regarded as a significant cash generator owing to the premium prices which can be levied for maintenance contracts on non-current equipment. It is estimated, for instance, that the value of a hardware maintenance contract for a single IBM System 38 is broadly equivalent to three AS400 contracts. However, the higher cost of maintenance will go some way towards off-setting the extra value of the contract.
- Opportunities exist for partnership arrangements with vendors allowing the independent sector to take on the maintenance of non-current equipment. CRC estimates that approximately 90% of it's business is conducted in co-operation with the original manufacturer of the equipment.
- The segment offers the opportunity for independent maintenance companies to fully utilise their service and engineering expertise. The stable nature of the systems software platform significantly reduces the requirement for systems software support which is a service traditionally dominated by the manufacturer. The servicing of non-current equipment is therefore strongly suited to the abilities of the independent sector.

It is concluded that the segment offers very significant opportunities for the independent sector. It is a large market which demands the skills set offered by independent maintenance companies and which has been largely ignored by the equipment vendors, as indicated both by the comments of users of non-current equipment and the lack of focus on the segment displayed by the manufacturers.

Exhibit V-5

Non-Current Equipment Sector



Total Hardware
Maintenance Market
1990 = \$13 Billion

Note: Numbers rounded
All figures are INPUT estimates

Exhibit V - 6**Comments from Users of Non-Current Equipment
A Brief Compilation**

These comments are drawn from a series of 30 in-depth user interviews conducted in November 1990 to gain a view of some of the major issues indicated by the 1990 Users Survey. All comments are made by users who regard their equipment as non-current.

- Spares availability will become more of a problem as the system is run down.
- Engineers lack experience and skill. The quality of service was poor and has declined to appalling and the user has no contact with the vendor.
- The quality of documentation is rated at 1 out of 10 which is attributed to the age of the equipment. Parts are available - eventually.
- Aged machine. The availability of parts and the attitude of the vendor has declined.
- Software support is theoretically available but very hard to get hold of. The software is old and expertise has evaporated.

2. The Technology Life-Cycle - The Opportunities

Exhibit V-7 provides a conceptual view of the link between the stages of the technology life-cycle and the level of service required to provide maintenance. The introduction of a new, leading edge, technology will be accompanied by two factors affecting the servicing of the product:-

- Firstly, the comparative complexity of the product combined with lack of familiarity on the part of the service provider imply that the servicing requirements will be high. The organisation is at the start point of the learning curve and the efficiency of the servicing operation will be low.
- Secondly, knowledge related to the new technology will be almost exclusively confined to the manufacturer of the equipment, who will therefore be the sole possessor of the experience required to provide service.

It is therefore concluded that the maintenance of leading edge technology is the preserve of the equipment manufacturer and consequently provides very limited market opportunities for the independent sector.

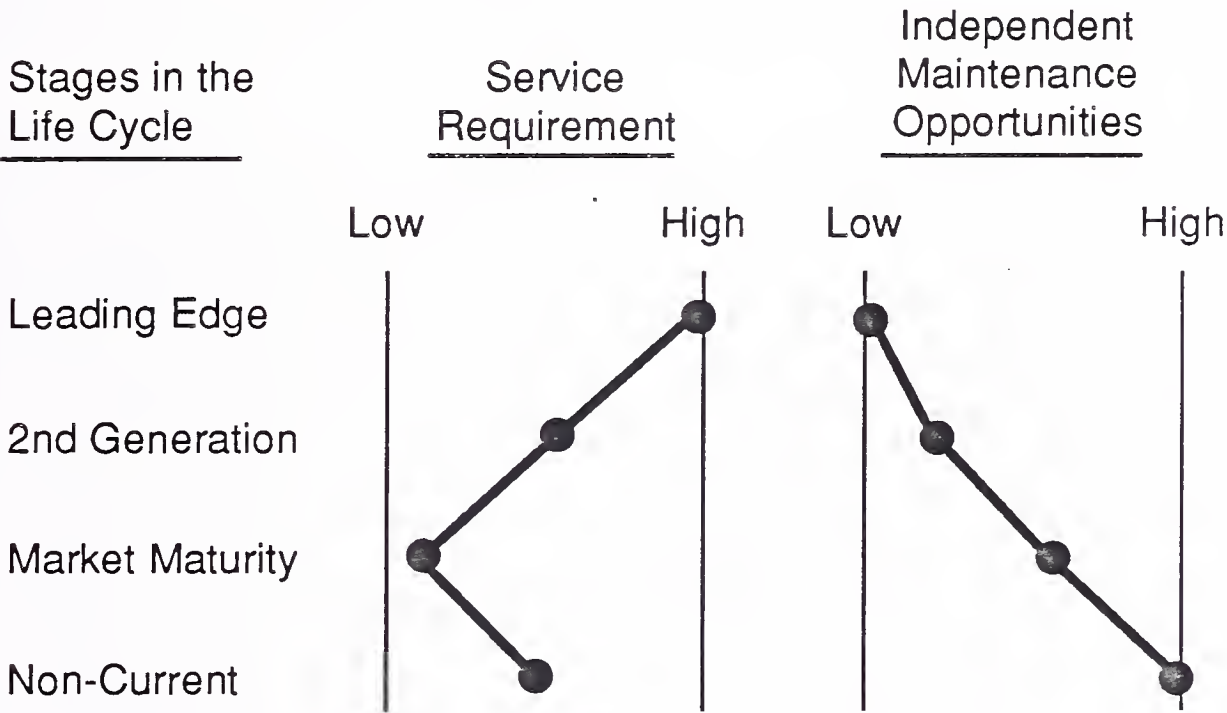
The 2nd generation and market maturity phases of the life cycle are characterised by three factors:-

- The equipment itself will approach its maximum level of reliability as technical modifications are incorporated. The equipment in the field will also still be at an age prior to the onset of component failure.
- Technical expertise on the product will expand beyond the equipment manufacturer through factors such as the effect of training and the movement of staff around the industry.
- The environment of very rapid technological evolution which characterises the IT industry leads the equipment manufacturers to concentrate their focus on newly introduced products.

These phases of the technological life cycle therefore provide an opportunity for the independent sector to compete for share. However, the companies that have successfully exploited this niche are those who have entered into partnership agreements with the equipment vendors.

Exhibit V-7

The Technology Lifecycle—The Opportunities
for the Independent Sector



C **The Growth of the Concept of "Service Partnerships."**

It is predicted that the growth of service partnerships will be a key factor driving the development of the customer services business during the first half of the decade. the term "service partnership" can be defined as the relationship between two or more service companies contributing to the delivery of an integrated service solution to the end user.

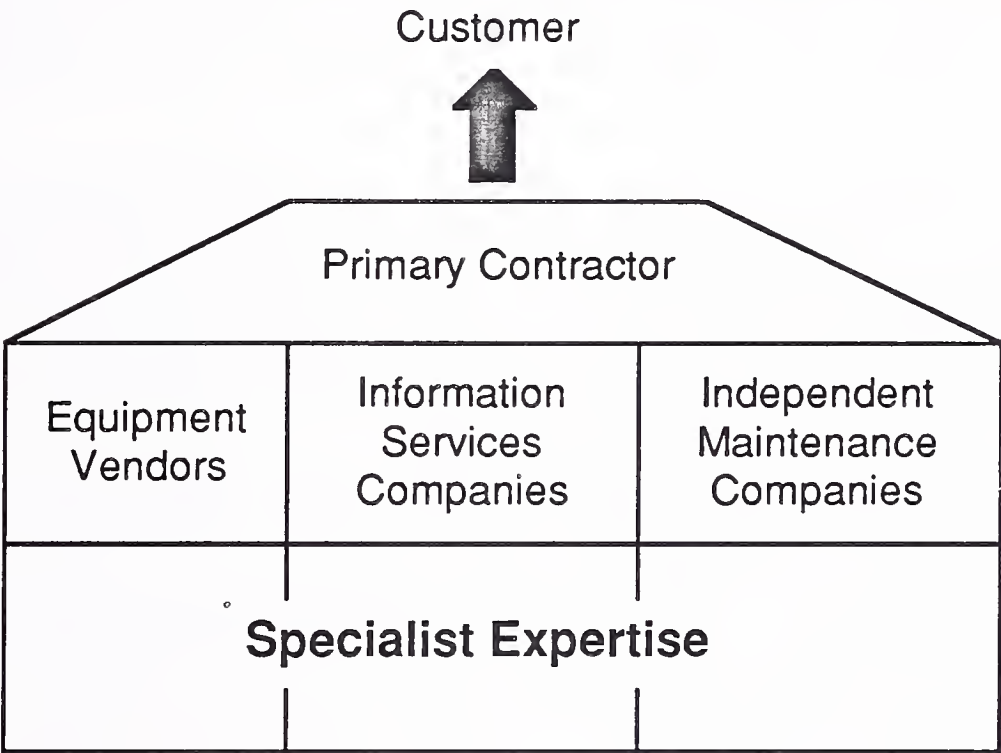
An example of the use of such a partnership is in the application of Digital's Enterprise Services programme, in which third party suppliers can be involved in the provision of the complete range of services offered under the programme. The concept of service partnership is illustrated in Exhibit V-8.

The factors driving the development of such partnerships can be considered as follows:-

- The demand for the single sourcing of customer services and the provision of integrated solutions.
- The increasing complexity of service products.
- The increase in competitive pressures.

Exhibit V-8

Service Partnerships—The Concept



1. The Demand for Single Sourcing and the Provision of Integrated Solutions.

Exhibit V-9 provides an analysis of the percentage of users who have expressed a preference for the provision of single source maintenance. the key point to note is extent to which single source service is regarded as the preferred option throughout Western Europe. However, the dominance of the primary manufacturer as the preferred supplier should also be noted.

The second factor to be considered is the number of services that are now offered by the customer services provider as illustrated in Exhibit V-10. The key point to note is that it becomes increasingly difficult for a single provider to develop the range of skills required in order to offer a large and disparate number of service offerings.

The demand for single source provision, combined with the complexity of the services which are increasingly providing the integrated service solution, provides a very considerable drive towards the increased use of partnership arrangements. The explanation behind this evolution is simply that a single provider will not possess the range of skills required to provide the quality necessary to meet the needs of the customer.

Exhibit V - 9

Analysis of User Preferences for Single-Source Maintenance - Western Europe, 1990

			Preferred Supplier (Percent)			
			Manu- facturer	Dealer	TPM	Alt Manu- facturer
Belgium	46	78	72	4	4	0
France	145	86	77	2	6	1
Germany	154	60	55	1	5	1
Holland	87	57	52	3	5	10
Italy	118	71	75	8	7	0
Norway	24	71	54	4	8	4
Spain	90	86	87	3	1	2
Sweden	82	78	59	10	7	11
Switzerland	91	70	69	2	2	1
U.K.	298	60	52	3	4	16
Western Europe	1,135	70	64	4	5	6

Source of data: INPUT 1990 User Survey

Exhibit V - 10**The Range of Customer Services**

Hardware Maintenance	Network Support	System Software Support
Environmental Services	Disaster Recovery	Systems Operations
Consultancy Services	Application Support	Education and Training

2. The Increasing Complexity of Service Products.

In addition to the increasing range of services offered by customer services vendors, the actual services are becoming increasingly specialised and complex.

The disaster recovery service provides a good example of the specialist skills required to compete credibly in the market. The specific skills needed are detailed in Exhibit V-11 which indicates the extent to which highly developed technical skills are combined with specialist knowledge specific to the market segment being attacked.

The example illustrates the extent to which high level, specialist skills are required within the market segments of the customer services business as a whole. The use of service partnerships provides the primary contractor with the ability to offer a high quality, integrated service solution, to the customer utilising the skills of specialist companies in the market.

Exhibit V - 11

The Disaster Recovery Skill Set

Service	Service Specific	Logistical	Environmental	Technical	
				Hardware	Software
Risk Assessment	High		High	Medium	Medium
Contingency Planning	High	Medium	High	Medium	High
Hardware Backup		High	High	High	High
Systems Software Skills					Medium
Networking Skills			High	High	High
Software Recovery Skills	High				High
Specialist Products	High		High	High	High
Testing	High	High	Low	Medium	Medium

3. The Increase in Competitive Pressures.

The pressure on margins imposed by the reduction in revenue from hardware maintenance has led companies to look to specialist partners who, because of their specialist focus, are able to provide high quality, flexibility and value for money, thereby giving the primary partner the opportunity to maximise the value of the total service to the customer. The approach being taken by Sun Microsystems provides a good example of this response. The company recognises that a specialist distribution company will provide a significantly more efficient keyboard replacement service than Sun itself can offer. By entering into service partnerships with such companies, Sun can improve upon the efficiency of its overall service operation.

4. The Opportunities

The drive towards the development of service partnerships will provide the opportunity for Europe's leading independent maintenance companies such as Granada, Thomainfor and Getronics to achieve primary contractor status with some customers.

However, it is clear that customers regard their primary equipment suppliers as the preferred primary contractor. The opportunities offered by the development of service partnerships to the independent sector must, therefore, be seen in terms of the provision of specialist, high quality service within an overall partnership.

The independent sector possesses two key advantages which will permit the development of areas of expertise as follows:-

- Proven multi-vendor maintenance capability.
- Overall quality and value of service.

Potential opportunities exist in areas such as multi-vendor network support and 4th party maintenance activities. It is predicted that the development of the market will lead to an increased level of specialisation by service suppliers in order to meet the challenge posed by an increased breadth and complexity of service offering.

5. Some Examples

Three examples provide an indication of the extent to which partnership agreements are being negotiated:-

- The UK subsidiary of Dell Computer Corporation, a US manufacturer of PC's, sub-contracts all first-line field maintenance activities to Sorbus. Dell retains total account responsibility and passes all calls through it's support hotline before despatching an engineer. Dell also monitor the quality of service supplied by contacting every customer who has reported a fault after the problem has been reported as rectified. However, the maintenance activity itself is undertaken by an independent maintenance company.
- Sun Microsystems has made a strategic decision to adopt the use of outsourcing for the exchange of keyboards, monitors and mice and for the replacement of components. Service partners will be selected on the basis of their expertise in particular segments of service. For example, the key skill required to provide a quality exchange service for keyboards is distribution and the service partners selected for this particular segment of the business will possess a very efficient distribution operation.
- As has already been indicated, CRC, the UK independent maintenance company, operates approximately 90% of it's business in partnership with the equipment manufacturer of the equipment it is servicing.



Multi-Vendor Maintenance Profiles

VI Multi-Vendor Maintenance Profiles

The purpose of this section is to illustrate both the extent to which and the reasons why equipment vendors are moving into multi-vendor maintenance. A series of seven profiles are included covering the following companies:-

- Digital
- Hewlett Packard
- IBM
- NCR
- Norsk Data
- Olivetti
- Unisys

The choice of profiles reflects the range of strategies being adopted by vendors as well as estimates of multi-vendor maintenance revenues and a summary of the services offered.

A Digital

The estimated revenues derived from Digital's multi-vendor maintenance operation are contained in Exhibit VI-1.

The multi-vendor maintenance service is divided into 2 sections which are described in Exhibit VI-2.

The service evolved in response to 2 factors:-

- A growth in customer demand,
- The inability of the suppliers of Digital plug-compatible equipment to provide an adequate level of service.

The company considers that demand is principally for the provision of single source maintenance covering PC's, workstations and communications equipment with particular emphasis on the interface between LAN's and company wide networks. The servicing of other vendors' CPU's is not of strategic importance and is provided in response to specific customer requirements.

The target market for the company's multi-vendor services is the existing base of Digital users. It is considered that the company's current customers offer a market of sufficient size to satisfy medium term growth requirements and that the user base offers Digital an obvious source of competitive advantage.

However, the possibility of competing for business from non-Digital customers is not ruled out should the business expand beyond the level of demand offered by the user base.

The company enters into partnership agreements with other equipment manufacturers and independent maintenance companies and considers the use of such arrangements to be critical to the success of the service.

Exhibit VI-1

Multi-Vendor Maintenance Revenues - Digital Western Europe - 1990

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	95	53
Total Customer Services Revenue	1910	100

Please Note: All figures are INPUT estimates
All figures are rounded

Exhibit VI-2

Multi-Vendor Support Services - Digital

Desktop Services (DTS)	
Core Components:	Start-up Services Maintenance Services Connectivity Services Advisory Services Management Services
Features:	Operating System & Application Software Application & Support Connection into LANS Ongoing Support of Networked Devices Hardware Maintenance of: <div>PC's Workstations Terminals Peripherals LAN Hardware</div>
Comments:	The service is targeted at customers with large populations of multi-vendor desktop equipment. The service is designed to be flexible and is aimed at providing a tailored a tailored solution to the customer.
Vendor Equipment Services (VES)	
Core Components:	Covers Maintenance on Non-Digital Hardware The Use of Digital Engineers & Digital Approved Sub-Contractors Encompasses Single Source Maintenance Does <u>Not</u> Cover Non-Digital Software

Exhibit VI-2 (Contd)**Multi-Vendor Support Services - Digital**

Features:	Covers Installation & Maintenance on Non-Digital Peripheral Products 12 Cover is Provided 8 Hour Target Response on Hardware Faults Covers Approximately 2000 Products From 200 Vendors
Comments:	The service evolved from customer demand for service on Digital plug-compatible devices. It is marketed primarily to existing Digital customers who have a requirement for single source maintenance.

**B
Hewlett Packard**

The estimated revenues derived from Hewlett Packard's multi-vendor maintenance operation are contained in Exhibit VI-3.

The multi-vendor maintenance service is described in Exhibit VI-4.

The service has been developed to meet two particular requirements:-

- To satisfy the demands of the existing Hewlett Packard customer base.
- To meet the servicing requirements of the company's VAR's, dealers and partners.

The service is seen by the company as an element of the total service solution which Hewlett Packard provides to its customers. However, in order to meet the needs of its business partners the company will provide multi-vendor service as requested and will use service partners to satisfy particular requirements in cases where Hewlett Packard itself does not possess the necessary expertise. Such service partners can be either equipment manufacturers or independent maintenance companies. It is worth noting that business partners include vendors such as Novell and Mentor whose customers have particular servicing requirements.

Although the need to satisfy the servicing requirements of the company's business partners implies a degree of flexibility in the range of products covered, the service is firmly aimed at the PC and the LAN marketplaces although the workstation market has been targeted for future expansion. The servicing of competitors' mini or mainframe computers is not included in the published multi-vendor service offering. By restricting the range of equipment covered, the company is able to provide the service using its own resources, thereby restricting the use of partnership arrangements to serving the particular needs of VAR's, dealers and business partners.

Within Europe, the company does not anticipate competing for multi-vendor maintenance business outside its own customer base.

Exhibit VI-3

Multi-Vendor Maintenance Revenues - Hewlett Packard Western Europe - 1990

Services	Revenues \$ Millions	
	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	18	3
Total Customer Services Revenue	593	100

Please Note: All figures are INPUT estimates
All figures are rounded

Exhibit VI-4**Multi-Vendor Support Services - Hewlett Packard**

Multi-Vendor Custom Service	
Core Components:	Configuration & Installation Services Relocation Service LAN Design & Support Software Support
Features:	Flexible Hours of Coverage Provision of Customised Repair Reporting Variable Service Response Bands: Class A: Within 4 Hours Class B: Within 24 Hours Class C: Best Effort Remote Support From the HP Helpdesk
Comments:	The service is primarily targeted at existing HP customers and is currently confined to PC products although the the company intends to expand the service to cover the workstation market.

**C
IBM**

The estimated revenues derived from IBM's multi-vendor maintenance operation are contained in Exhibit VI-5.

The multi-vendor maintenance service offered by IBM is split into two categories:-

- High volume products in the PC market place are serviced exclusively by service partners, largely owing to the fact that IBM itself does not provide direct service on PC's. The company uses the term "4th party maintenance" to describe these partnerships. A number of preferred suppliers are selected by IBM which are invited to tender for service contracts on a competitive basis. Such preferred suppliers are likely to be from the independent maintenance sector.
- In cases where IBM takes prime contractor responsibility on a multi-vendor site including non-IBM CPU's, the company will work in partnership with equipment vendors. The philosophy underpinning this approach is that, wherever possible, equipment will be maintained by the manufacturer. Generally speaking, therefore, the independent sector will not be involved in the maintenance of mid-range or large systems.

The service is exclusively targeted at existing IBM customers and is regarded as the provision of a co-ordinated approach to the management of service on a multi-vendor site. There is, therefore, no strategic intent to expand into the open market. Indeed, the company firmly holds the view that the manufacturer is the most appropriate agent to provide service and is therefore opposed to the concept of independent maintenance.

Exhibit VI-5

**Multi-Vendor Maintenance Revenues - IBM
Western Europe - 1990**

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	25	0.75
Total Customer Services Revenue	3350	100

Please Note: All figures are INPUT estimates
All figures are rounded

**D
NCR**

The estimated revenues derived from NCR's multi-vendor maintenance operation are contained in Exhibit VI-6.

The company's multi-vendor maintenance service is designed to support PC's, LAN's and desktop peripherals and is intended to underpin NCR's overall open systems product strategy. A move into the provision of multi-vendor support for mid-range and large systems CPU's is under consideration but the difficulty inherent in supporting proprietary systems software is regarded as a significant barrier to entry to this segment of the market.

The move into multi-vendor maintenance was seen by the company as an important response to the decline of revenues from the traditional hardware maintenance activity. It should be noted that the company is not aiming to restrict the service to existing NCR customers but has taken the decision to compete on the open independent service market. Multi-vendor maintenance is therefore regarded as an important strategic service in it's own right and is being driven by the company rather than being offered in response to specific demands from the existing customer base.

Partnership arrangements are seen regarded as an important element of the delivery of the service. The company will seek partnerships with other equipment vendors and independent maintainers and also acts as a sub-contractor to other multi-vendor maintenance providers.

Exhibit VI-6

Multi-Vendor Maintenance Revenues - NCR Western Europe - 1990

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	35	4
Total Customer Services Revenue	880	100

Please Note: All figures are INPUT estimates
All figures are rounded

E Norsk Data

The estimated revenues derived from Norsk Data's multi-vendor maintenance operation are contained in Exhibit VI-7.

It is apparent that Norsk Data is currently a minor player within the multi-vendor maintenance market. However, the company has been included because it provides the first instance of a joint venture between an equipment manufacturer and a leading independent maintenance provider; namely Thomainfor.

The company is currently undertaking a change of strategic direction in which service is being regarded as a key element of the core business. Multi-vendor maintenance has been targeted as a key element of the service business.

Although the multi-vendor service is still being developed, The company has stated that it intends to compete for business in the open market across a wide product range. The technical resources required to provide the service will be drawn from Norsk itself, the constructive use of service partnerships with specialist independent maintenance companies and, obviously, through the resources of Thomainfor.

Exhibit VI-8 illustrates the ownership details of the joint venture between Norsk and Thomainfor in the relevant European markets. In the UK, the operation will be managed on a day to day basis by Norsk, while in Benelux, France and Switzerland, Thomainfor is taking over the entire Norsk operation including equipment and software sales.

The joint venture with Thomainfor has immediately provided Norsk with a level of technical credibility across a wide range of products, supported by a high level of expertise and by Thomainfor's support organisation which is able to offer a Pan European service.

A further significant factor which favoured the venture is that Thomainfor has no plans to enter the Scandinavian market, thereby avoiding a potential conflict of interest in an area in which Norsk has particular focus. Norsk will take advantage of Thomainfor's support capability to provide the technical credibility to make the intended move into the Scandinavian independent maintenance market.

Norsk provides an example of a company which is adopting an aggressive approach to the market in response to perceived opportunities within the multi-vendor maintenance arena. The joint venture with Thomainfor also illustrates the extent to which services partnerships are being developed in pursuit of strategic goals.

Exhibit VI-7

Multi-Vendor Maintenance Revenues - Norsk Data Western Europe - 1990

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	3	2
Total Customer Services Revenue	140	100

Please Note: All figures are INPUT estimates
All figures are rounded

Exhibit VI-8**Nork/Thomainfor Joint Venture
The Ownership Details**

	Country			
	U.K.	France Benelux Switzerland	Scandinavia	Rest of Europe
Ownership details	Joint venture Nork holds	Thomainfor 100%	Norsk 100%	No change
Operational management responsibility	Norsk	Thomainfor	Norsk	No change

**F
Olivetti**

The estimated revenues derived from Olivetti's multi-vendor maintenance operation are contained in Exhibit VI-9.

Exhibit VI-10 lists the constituent companies within the Olivetti independent maintenance operation with a brief description of the principal areas of activity.

Olivetti is undoubtedly the market leader within the multi-vendor maintenance market. It has achieved its position by adopting a strategy of acquisition targeted at commercially viable companies which possess the skills required to expand Olivetti's presence. It should be noted however, that the companies within the group are managed at arms length; no attempt has been made to mould the operation into a corporate unit.

The strategy adopted by Olivetti has been adopted in response to two perceived factors:-

- Although there is widespread recognition of the pressure which currently facing the customer services market, a degree of confusion exists within many equipment vendors as to the strategy and goals that should be pursued by customer services organisations. Olivetti argues that there remains an ongoing pre-occupation with the need to maintain "account control". Such an attitude fails to take into account either current competitive pressures or the attention being given to IT expenditure by the senior management of user companies.
- The company has developed a policy of "open support" to take advantage of the growth in open systems which, it is argued, provides opportunities for the development of new service programmes.

The extensive of acquisition undertaken in the development of the multi-vendor maintenance service business renders the use of service partnerships largely unnecessary. Indeed the development of the company's skills base has been a carefully considered element of the overall evolution of the business.

Exhibit VI-9

Multi-Vendor Maintenance Revenues - Olivetti Western Europe - 1990

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	270	20
Total Customer Services Revenue	1330	100

Please Note: All figures are INPUT estimates
All figures are rounded

Exhibit VI-10

Company	Mission	Location
Decision Systems International	<p>To provide maintenance and systems support in the IBM and DEC mini markets</p> <p>To sell useful, life-enhancing add-ons peripherals and second-user systems in the IBM and DEC markets</p> <p>To provide single-source maintenance for selected customers with multivendor environments</p>	<p>Belgium</p> <p>France</p> <p>Spain</p> <p>U.K.</p> <p>Germany</p> <p>Holland</p> <p>Italy</p> <p>Australia</p>
Testpoint	Third-party maintenance	Canada
C.T.S. Comtech Service	Third-party maintenance with particular skills in network and communications	Belgium
Dansk Data Installation	Network installation and maintenance specialist	Denmark
Oakley Computer Ltd.	Third-party maintenance in a Wang environment	U.K.
O.A.S.	Third-party maintenance in the AES, Wordplex and Wang environments	U.K.
Datronic Peripheral Systems	<p>Third-party maintenance in the DEC environment</p> <p>To sell useful, life-enhancing add-ons peripherals and second-user systems in the markets</p>	Switzerland
Ing. F. Iachiello & Co. Spa	Network installation and maintenance specialist	Italy

G
Unisys

The estimated revenues derived from Unisys' multi-vendor maintenance operation are contained in Exhibit VI-11.

Currently, Unisys does not have a specific multi-vendor maintenance service in place. The company will respond to demands from existing customers on an individual contract basis which would include the use of service partnerships if required. A small number of sizeable contracts have been won including, for example, the servicing of computer equipment within Macdonald's restaurants in the southern half of the UK.

The company is reviewing it's position with regard to multi-vendor service. It is, therefore, anticipated that Unisys will evolve a more focussed service product over the next twelve months.

Exhibit VI-11

Multi-Vendor Maintenance Revenues - Unisys
Western Europe - 1990

	Revenues \$ Millions	
Services	Revenues	% of Customer Service Revenues
Multi Vendor Maintenance	4	0.5
Total Customer Services Revenue	700	100

Please Note: All figures are INPUT estimates
All figures are rounded



Leading Independent Vendor Profiles



VII Leading Independent Vendor Profiles

This section of the study provides profiles on the leading five independent maintenance companies in Western Europe. The companies are:

- Getronics
- Granada
- Sorbus
- Spectral/MIS
- Thomainfor

Immediately prior to publication of this study a joint venture agreement was announced between ICL and Bell Atlantic Business Systems Inc. of USA. This joint venture results in a change of ownership of Sorbus Europe to a company in which ICL and Bell have equal shares - Bell Atlantic Customer Services International. The full details of the joint venture and its impact on the organisation of Sorbus Europe have not yet been revealed, therefore the profile of Sorbus Europe included in this section relates to the company prior to announcement of the joint venture.

A Getronics

Getronics Service

1000 AR Amsterdam	MD	Peter van Voorst
Postbus 652	Status	Division of Getronics Grp
Netherlands	Revenues (1990)	DFL120m

Tel No. (31) 20 58 61 411

Fax No. (31) 9 44 71 629 0179

The Company

The Getronics Service division is concentrated in three geographic locations: The Netherlands, Belgium and Spain, and in addition the Dutch operation maintains management control of the European Repair Centre, based at Erlensee, in the Frankfurt region of Germany.

Independent maintenance operations in the Netherlands and Belgium are both carried out by Getronics Service. However, in Spain the company has entered into a joint venture with Barcelona Impuls S.A to form Gematica in which Getronics holds 62% and Barcelona Impuls 35% of the equity. In addition to the independent maintenance activities, the division also supplies installation services provided through Electric Engineering, and refurbishment and logistics operations through Furbex. Both these subsidiary companies are based in the Netherlands.

Revenue figures and forecast information relating to the geographic areas of operation are listed in Exhibit VII-1. The company claims market leadership of the independent maintenance market in the Netherlands and has stated that it intends to achieve leadership in Belgium during the course of 1991.

Exhibit VII-1

Getronics Service - Revenues and Growth Forecasts - 1990

	Country		
	Nether- Lands	Belgium	Spain
Revenues (Dfl Millions)	102	14	4
Forecast Growth 1991 (Percent)	16	25	50

Information relating to the numbers of staff employed in the independent maintenance activity of the division and the number of service centres operated by the company is provided in Exhibit VII-2.

Exhibit VII-2

Getronics Geographic Organisation 1990

Number of Staff in Country			
Employee Category	Nether-Lands	Belgium	Spain
Sales	13	5	2
Field Engineers	264	37	17
Bench Engineers	252	31	9
Number of Service Centres	9	4	4

Operational Activities

The range of equipment currently maintained by the company is listed in Exhibit VII-3.

Exhibit VII-3

Getronics
Equipment Maintained

Equipment Category	Equipment Manufacturer
Mini Computers	IBM - S/300, AS/400. DEC - Micro-VAX. MAI. Wang - OIS, VS.
UNIX Computers	Altos, Arix, Convergent Technologies, Micro Five, Motorola, NCR Tower, Unisys 5000.
Personal Computers	All Manufacturers.
Peripherals	All Manufacturers.
Data Communications	All Manufacturers.
PABX	Northern Telecom.
PC Networks	Apple Talk, IBM Token Ring, Novell.

In addition to the maintenance of equipment, the division provides the following services:-

- The European Repair Centre. This service operates from two locations; Amsterdam and Erlensee (Frankfurt) and provides repair of equipment to component level. The main target market for the service is US and Japanese importers that have a requirement for a local repair facility but do not wish to provide the service themselves. Customers include Sun Microsystems and Canon.
- The Network Management Centre. The centre offers both value added services and management of WAN's and large LAN's. Early in 1991 this service was incorporated into Getronics Network Services and separated from the service division.
- PC Software Services.
- LAN Software Services.
- Project Management Services.

The end-user services (excluding the repair centre) are primarily targeted at the Banking and Finance sectors, Government and the Public Sector.

Future Direction

The division has identified the service of large networks of PC's and the associated peripheral devices, run by large end-users, as a significant opportunity which will be supported by services such as help desk support and logistics. Networking is also considered to offer very considerable growth prospects both in terms of service and outsourced management.

B Granada

Granada Computer Services Europe

Wallis House	MD	Peter Edwards
27 Broad Street	Status	Subsidiary of Granada PLC
Wellington	No. of Emp.	2700
Berks RG11 1AU	Revenues (1990)	\$316 Million
United Kingdom		

Tel: (44) 734 774000

Fax: (44) 734 774838

The Company

Granada Computer Services Europe represents the larger part of Granada Computer Services International, the smaller part of this company is concerned with operations in North America. Granada Computer Services Europe is the largest independent maintenance company in Europe with operations extending to cover nine European countries and is estimated to command about a 16% share of the independent maintenance market in Europe.

The overall company, Granada Computer Services International, first entered the independent maintenance market in Western Europe in 1986. Market entry was achieved in a series of relative aggressive acquisitions of existing leading companies in the market. The major acquisitions were:

- 1986 : The company acquired CFM and SMS in France, UK and Germany. Also at this time SMS in Spain was launched and the activities of CFM and SMS in the UK were integrated.
- 1987 : The company acquired CFM and SMS in France, UK and Germany. Also at this time SMS in Spain was launched and the activities of CFM and SMS in the UK were integrated.
- 1987 : Further acquisitions were made in France and UK, and SMS was launched in Italy and Belgium.
- 1988 : Was the year of the largest acquisition, that of DPCE. Other acquisitions at this time included Mainstay and WIGO.

In order to develop Granada Computer Services International the company have invested over \$160 million in acquisitions, including those made in North America.

Currently Granada Computer Services International employs about 2,800 staff, of which over 2,700 are employed by Granada Computer Services Europe and almost 2,000 with the UK.

Financial data for Granada Computer Services International is provided by Exhibit VII-4

Exhibit VII-4

Granada - Revenue Breakdown

Country	1990 Revenue (\$ Millions)	Percent
United Kingdom	219	58
France	28	8
Germany	20	6
Netherlands	16	4
Spain	12	3
Italy	5	1
Belgium	12	3
Sweden	3	< 1
Switzerland	1	< 1
SUB TOTAL FOR EUROPE	316	84
NON-EUROPEAN REVENUE	61	16
TOTAL	377	100

Source - INPUT Estimates.

The number of staff employed by Granada Computer Services International in the various geographical locations are listed in Exhibit VII-5.

Exhibit VII-5

Granada - Employee Analysis

COUNTRY	NUMBER OF EMPLOYEES
United Kingdom	1,948
France	270
Germany	160
The Netherlands	116
Spain	80
Italy	45
Belgium	90
Sweden	25
Switzerland	10
SUB TOTAL FOR EUROPE	2744
NON EUROPEAN STAFF	53
TOTAL	2797

Source - INPUT Estimates.

Services

Granada Computer Services International Ltd is principally active in Customer Services:

Most of Granada's revenue is derived from third-party maintenance contracts. However, as derivatives of these contracts, Granada offers a number of professional services. For example they provide a consultancy service for users designed to support and develop wide-area networks (WANs) and local-area networks (LANs). These services are supplemented by support and maintenance services.

Granada Computer Services International Ltd also offers parts repair and training to smaller specialised - niche independent maintenance companies. Other services and activities include:

- Installation and deinstallation for users, manufacturers, brokers and lessors
- Enhancement and upgrading of machine performance
- Computer exchange and traditional brokerage services
- Problem diagnostics
- Disaster recovery
- System software support

The range of equipment serviced by Granada varies between countries. However, the company service equipment supplied by all the major manufacturers including IBM, Digital, ICL and Amdahl in all claiming that about 750 different brands of equipment are serviced. The range of equipment serviced by the company extends from mainframes to PC's and peripherals, including networks.

The Future

The future for Granada Computer Services International is difficult to predict. However some facts can be stated:-

- Granada Business Services Division, of which Granada Computer Services International is part, reported a loss of 700,000 (\$1.35 million) in the six month period up to April 1991.
- The company have announced that they will divest themselves of about 1,200 low value/low margin contracts.
- The Management of Granada Computer Services International has been subject to a major reorganisation and many senior staff have left the company.

These facts suggest a change in strategy for Granada for example:-

- Focus on profitability rather than revenue/growth
- Transfer of a higher degree of autonomy to the country organisations.

C Sorbus

Sorbus (Europe)

European Head Office:
Bell Atlantic Europe
Twin House, First Floor
Rue Neerveld 107
1200 BRUSSELS
Belgium
Tel: (32) 2 774 15 51

President:	Edgar L Brown
Status:	Division of Bell Atlantic
No of Employees:	960
Revenues (1990):	\$74 Million

Note:- This profile relates to Sorbus Europe prior to the July 1991 announcement of the joint venture between ICL and Bell Atlantic Business Systems Inc. which involved the European operations of Bell Atlantic.

The Company

Sorbus Europe is the independent maintenance operation of Bell Atlantic Europe, which is a division of Bell Atlantic Business Systems Inc. of the US. The company has operations in France, Italy, the UK and Germany which maintains management responsibility for subsidiaries in Austria and Switzerland. The European country organisation of Sorbus is illustrated in Exhibit VII-6. The core business of Sorbus is described by the company as the independent provision of computer services to business.

The operation evolved as a result of two acquisitions made by Bell Atlantic as follows:-

- In 1985 the corporation purchased Sorbus Inc. which was the worlds largest provider of independent maintenance and which included a substantial European operation.
- In February 1988, Bell Atlantic acquired Bell Technical Services from Bell Canada Enterprises. Bell Technical Services owned the following European independent maintenance companies:-
 - Maintainer General Computer Systems Ltd.
 - Cable & Wireless UK Services Ltd
 - Eurotech BV
 - Eurotechnica SA
 - Eurotech Italia
 - Datamont

The company is now one of Europe's leading independent maintenance providers with revenues estimated at over \$80 million. Revenue estimates for the Sorbus country operations are contained in Exhibit VII-7.

INPUT LIBRARY

Exhibit VII-6

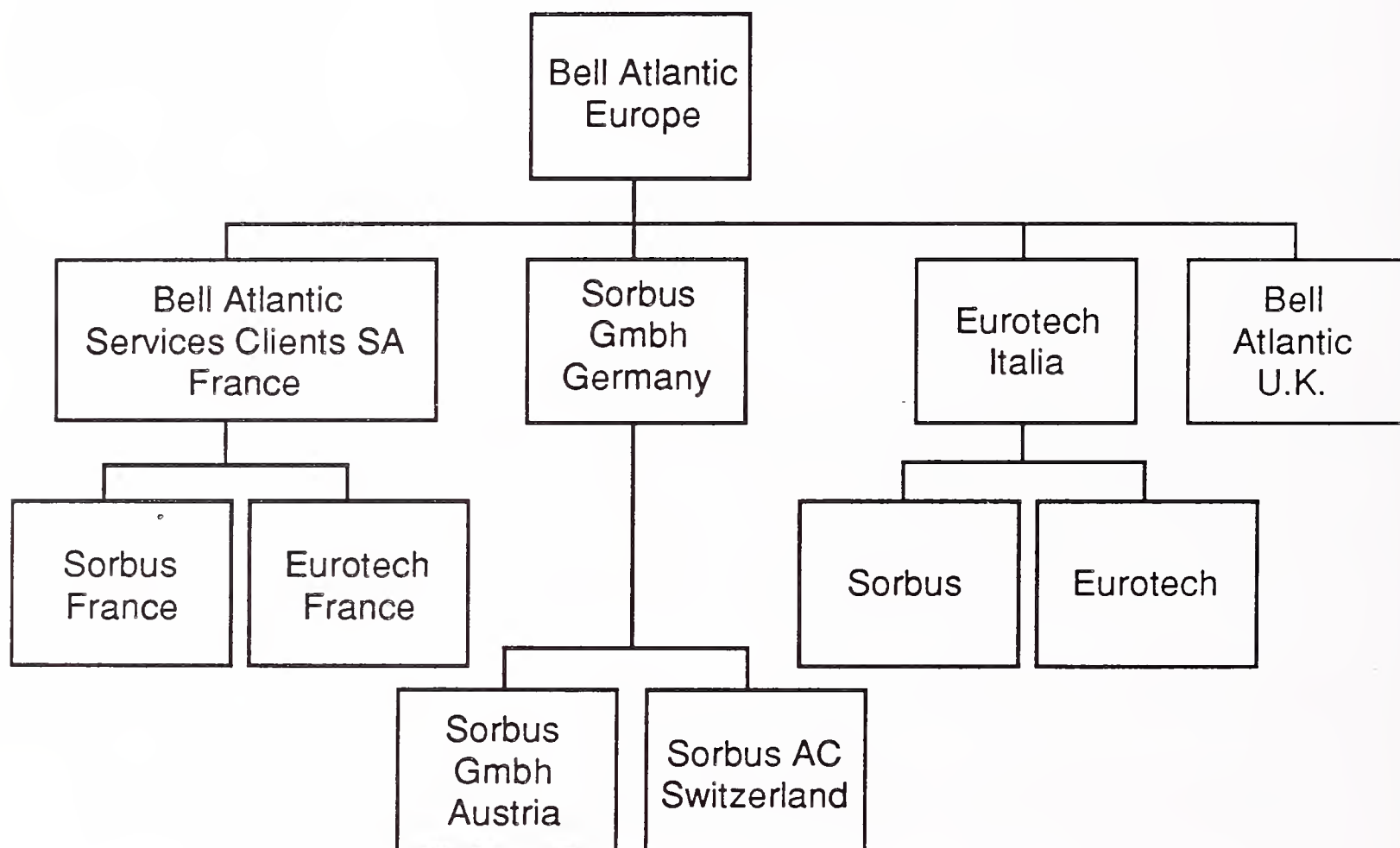
Sorbus Europe

Exhibit VII-7**Sorbus Europe Revenues - 1989-1990**

Country	Revenues - \$ Millions	
	1989	1990
France	16.0	17.0
Germany	18.0	20.0
Italy	5.6	6.0
United Kingdom	27.0	31.0
TOTAL	66.5	74.0

Source - INPUT Estimates

Sorbus Europe employees approximately 960 people of whom, it is estimated, over 550 are engineers. Exhibit VII-8 provides the estimated staff breakdown by country.

Exhibit VII-8**Sorbus Europe - Employee Analysis**

Country	Numbers of Staff Employed
France	245
Germany	185
Italy	90
United Kingdom	440
TOTAL	960

Source - INPUT Estimates

Services

Although Sorbus is aiming to provide a single source of computer services to its customers, the company grew through independent maintenance which continues to account for the majority of the company's revenues and which is considered to be the core business. Exhibit VII-9 details the major equipment ranges maintained.

Exhibit VII-9

Sorbus Europe - Equipment Maintained

France: PC's to mainframes and data communications products. Principal Manufacturers: IBM, Bull.
Germany: PC's, peripherals and IBM mid-range. Principal Manufacturers: IBM.
Italy: PC's, data communications equipment, and IBM mid-range. Principal Manufacturers: IBM.
United Kingdom: PC's to mainframes and point of sale devices (EPOS). Principal Manufacturers: IBM, ICL, Amdahl, DEC, DG.

Source - INPUT

In addition to independent equipment maintenance, the company provides the following range of services:

- Network Support
- Software Support
- Disaster Recovery
- Systems Operations (Facilities Management)
- Installation Services
- Consultancy

Although the basic range of services provided is common to the country organisations, a number of significant differences do exist. Such variations can be partly attributed to differences between country markets: For example, Germany is not, as yet, a major market for PC's which explains the lack of a significant PC maintenance service in the Sorbus Germany service portfolio. However, a second explanation is that the country subsidiary organisations act as autonomous business units and have, therefore, developed and maintained services to meet local demand.

Strategic Direction

The company is confident that growth in the independent maintenance market will continue. The basis of this prediction is that the pressures faced by the equipment manufacturers in the equipment market will force equipment vendors to concentrate on their core businesses. In addition the company views the emphasis that the independent sector places on service as a significant competitive advantage which the equipment vendors have difficulty in challenging.

Sorbus also anticipates that equipment maintenance will remain the company's core activity for the foreseeable future. Although value added services are offered to meet the demands of customers, the company regards the emphasis placed on the growth of these services as over stated. It anticipates that the growth in the sector will be fuelled by expansion in the European economy as the 1992 harmonisation of Europe continues to attract companies into the E.E.C.. Consequently, Sorbus is continuing to target large corporate customers as the major source of its business.

D Spectral/MIS

SPECTRAL/MIS
17 Boulevard Ney
75018 Paris
France

Tel No. (33) 1 40 38 36 34

PDG:	M. Vandenhede
DG:	J. Villeminot
Status:	Subsidiary of Groupe Concept
No. of Emp.	500
Revenues (1990)	FF286 Million

The Company

The company was formed in 1989 as the result of a merger between Spectral and MIS it is currently the second largest independent maintenance company in France and rated number five in Europe. Although it does maintain operations in French overseas territories, it concentrates primarily on the French market.

Fifty-one percent of the equity of the company is owned by Technic Informatique, 30% is held by CCMC and the remaining 19% is dealt on the open market. The company is capitalised at 34.3FF Millions and quoted on the second market of the Paris Bourse. Both Technic Informatique and CCMC are subsidiary companies of Groupe Concept, the French information systems services company.

Exhibit VII-10 indicates the current financial position of the company.

Exhibit VII-10

Spectral/MIS Financial Position - 1990

	Year		
	1989	1990	Forecast 1991
Revenues (FF millions)	238	286	320
Net Profit (FF millions)	23.8	22	25.5
Net Profit Margin %	10	7.7	8

Spectral/MIS is parent to a number of subsidiary companies and is continuing to regard acquisition as an element of its overall growth strategy. The most notable recent acquisition was that of Econocom France. Exhibit VII-11 lists the subsidiary organisations of the company.

Exhibit VII-11

Spectral/MIS - The Subsidiary Companies

- Econocom Maintenance France
- Centrale Computer
- Compower
- TMIS (Joint Venture in which Promodata holds 34%)
- MMC
- Aramis

The company currently operates from 70 offices in total. However, these offices are being replaced by 18 regional offices which will include storage for their inventory of spare parts. Exhibit VII-12 analyses the staff employed by the company.

Exhibit VII-12

Spectral/MIS - Employee Analysis

Engineering Staff	317
Technical Support	34
Sales & Marketing	16
Administrative	133
TOTAL	500

Services Provided

Technical services are provided through four divisions as follows:-

- Mainframe
- Mini
- Micro
- VAM (Valeur Ajoute la Maintenance)

Exhibit VII-13 details the range of hardware products currently supported.

Exhibit VII-13

Spectral/MIS - Equipment Maintained

Mainframes:	IBM Bull	3090 GCOS8
Minicomputers:	IBM Bull Sun Altos	DPS 4 DPS 6 DPX
PC's:	IBM & Compatibles Bull HP Macintosh Sun Altos	

The VAM division is responsible for the supply of the following services:-

- Cabling
- Networking Support
- Equipment Installation and Commissioning
- Laboratory Services

In addition to hardware maintenance activities and the services supplied by the VAM division the company also provides the following range of services:-

- Consultancy
- Parts Sales
- Training
- Disaster Recovery (Bull DPS 6 only)

Spectral/MIS does not currently support software, but the position is currently under review. The full range of alternative services supplied currently accounts for approximately 6% of turnover.

E Thomainfor

Thomainfor

BP 26
78142 Velizy Villacoublay Cedex
France

CEO: Roger Chevrel
MD: Christian Mons
Status: Subsidiary of
Thomson CSF
No. of Emp. 1184
Revenues (1990): FF 821 Million

Tel No. (33) 1 30 70 78 54
Fax No. (33) 1 30 70 78 70

The Company

Thomainfor (Thomson Maintenance Informatique) is a wholly owned subsidiary of Thomson CSF. The company is based in France with operations in the following European countries:-

- Austria
- Belgium
- Germany
- Spain
- Switzerland
- The United Kingdom

In the United Kingdom, Thomainfor has entered into a joint venture with Norsk Data to form Service Team in which Thomainfor holds a minority interest.

The primary activity of the company is independent maintenance, it is currently the market leader in France and the second largest independent maintenance company in Europe. Turnover in 1990 was FF821 Million and the company employs over 1000 people.

Exhibit VII-14 analyses the growth of the company for the four year period up to 1990.

Exhibit VII-14

Thomainfor Revenue Growth 1987-1990

YEAR	1987	1988	1989	1990
Revenues (FF million)	180	220	450	821
Growth (%)		22	105	82

The company has grown through the pursuit of an aggressive strategy of acquisition which largely accounts for the enormous revenue growth recorded by the company in recent years. Exhibit VII-15 lists the major acquisitions made by the company.

Exhibit VII-15

Thomainfor - The Major Acquisitions

- | | |
|----------------------|--|
| • CII | • Telemecanique |
| • Sems | • Cimsa |
| • Sintra | • Sopra |
| • Matra Data Systeme | • Control Data (independent maintenance) |
| • Tekserv | • Sodeteg TAI |
| • APH | • GEMC |
| • Datacom | • Cero |
| • Awitex | • Econocom Germany |

The most significant acquisition undertaken by the Company was that of the European independent maintenance business of Control Data which was announced in June of 1989. The result of this takeover was to expand Thomainfor from being a purely French operation into a Pan-European company with interests in Austria, Germany, Switzerland and the United Kingdom.

Exhibit VII-16 indicates the current geographic spread of Thomainfor's business operations.

Exhibit VII-16

Thomainfor - European Operations

Country	Revenues FFM (1990)	No. of Employees	No. of Service Centres
Austria	26	40	6
Belgium	41	87	6
France	648	823	69
Germany	58	114	15
Spain	20	64	6
Switzerland	6	8	1
United Kingdom *	22	48	4
TOTAL	821	1184	107

* Prior to joint venture with Norsk Data in 1991.

Services Provided

Exhibit VII-17 lists the categories of equipment and software maintained by the company.

Exhibit VII-17

Thomainfor - Service Range

Manufacturers:

IBM, Digital, Bull, Sun Microsystems, ATT,
All Major Mini Manufacturers

Equipment Categories

CPU's, Peripherals, Workstations, PC's, Networks

Software

UNIX, VMS, MVS, GEOs 6/7, MS/DOS, PROLOGUE

Appendixes

A Additional Independent Maintenance Company Profiles

This section of the study contains profiles of independent maintenance companies that are additional to the leading five independent vendor profiles in Section VII.

COMPANY PROFILE

KH-SERVICES INDEPENDENT MAINTENANCE

1, Energieweg
2627 AP Delft
The Netherlands
Tel: 31 15 60 99 99
Fax: 31 15 61 44 37

MD: Derik van Dijken
Status: Subsidiary
Number of Employees: 250
Revenue (FYE 31-12-90): DFL 30 million

The Company

KH-Services was founded in 1989 and is a wholly owned subsidiary of the KH-Electronics group with 700 employees and 1989 revenues of DFL 270 million. KH-Services main business areas are technical support and services and independent maintenance. The company operates within the Benelux.

KH-Services markets its services to clients within manufacturing, retail distribution, government and telecommunications.

As of June 1991, KH-Services employed 250 staff.

Exhibit A

EMPLOYEE ANALYSIS

EMPLOYEE CATEGORY	NUMBER OF EMPLOYEES
Maintenance	110
Field Engineers	60
Bench Engineers	40
Support Analysts	20
Sales Personnel	10
Administration	10
TOTAL	250

Key Products and Services

KH-Services specialises in technical services for communication equipment, microcomputers, minicomputers, computer peripherals and test and measuring instruments. Its activities include:

- product training
- testing and assembly of equipment
- technical consulting
- installation of equipment
- preventive and corrective maintenance

Types of equipment maintained include:

Minicomputers: Digital 7XX, Micro Vax II and III, 3500, Quantel, Sun.

Test and Measuring Equipment: Calibration laboratory.

Business PCs: All major manufacturers.

Peripherals: All Major manufacturers.

Networks: Novell, Lanmanager, Banyan.

Other Equipment: CAD/CAM, plotters.

Market Analysis

Exhibit B

1990 MARKET ANALYSIS BY GEOGRAPHIC AREA (Dfl MILLIONS)

COUNTRY	REVENUE	PERCENT
The Netherlands	27	90
Belgium	3	10
TOTAL	30	100

Financial Information

Revenues for 1990 were Dfl 30 million (1989, Dfl 25 million). 1991 revenues are forecast to be around DFL 30 million.

COMPANY PROFILE

ATM - ADVANCED TECHNOLOGY MAINTENANCE LTD

21 Bristol Road
Metropolitan Centre
Greenford
Middlesex UB6 8UP
United Kingdom
Tel: 44 81 578 9222
Fax: 44 81 578 5676

Chairman and MD: Bob Brittain
Status: Private
Number of Employees: 130
Revenue (FYE 31-12-90): 5.8 million

The Company

ATM was formed in 1983 and is a member of Technology Management Group Plc, a group of companies operating in the high technology field. ATM's principal activity is the maintenance and repair of computers and associated equipment. The company is among the leaders in the third party maintenance sector in the U.K.

ATM's customer base numbers some 4,000 companies in industry and commerce in the U.K., ranging from major corporates to small businesses. ATM customers include BP Petroleum Development, Guinness Plc and National Tyres.

As part of its development plan, ATM has acquired other companies.

In 1989, ATM was appointed as the sole U.K. service agency for Euroserve, a consortium of the major independent computer maintenance companies operating in Europe. Through Euroserve, ATM can provide its customers with a computer maintenance solution throughout Europe.

ATM's objective is customer satisfaction through high quality computer services.

Exhibit A

KEY EXECUTIVES

NAME	POSITION
Bryan Weir	Deputy Managing Director
Colin Robertson	Sales Director

Exhibit B**1990 EMPLOYEE ANALYSIS**

EMPLOYEE CATEGORY	NUMBER OF EMPLOYEES
Field Engineers	65
Bench Engineers	20
Sales	15
Administration/Other	30
TOTAL	130

Key Products and Services

ATM Support services include:

- Technical support
- Training
- Escalation
- Product repair centre
- Logistics and spares

ATM Specialist services include:

- Network support
- Software support (PCs)
- Management information
- Service management
- Service in Europe (Euroserve)

Type of equipment maintained includes:

Minicomputers: Digital PDP, MicroVax II.

Business PCs: Apple, Compaq, IBM, NEC, Tandon, Toshiba and all other major manufacturers.

Peripherals: Brother, DEC, Epson, HP, NEC, Panasonic and all other major manufacturers.

Other equipment: Networks - Novell, 3Com.

Financial Information

Revenues for the financial year ended 31-12-1990 were 5.8 million compared to 1989 revenues of 4.5 million.

COMPANY PROFILE

NELSON COMPUTER SERVICES

St. Johns Court
Bacup Road, Rawtenstall
Lancs. BB4 7PA
Tel: 44 706 217755
Fax: 44 706 212597

MD: Steve Nelson
Status: Private
Number of Employees: 94
Revenue (FYE 31-12-90): 1.75 million

The Company

Nelson Computer Services was founded in 1970 by Steve Nelson, the managing director of the company. The company provides third party maintenance services for computer equipment and has four service centres in the U.K.

As of May 1991, Nelson Computer Services employed 94 staff.

Exhibit A

EMPLOYEE ANALYSIS

EMPLOYEE CATEGORY	NUMBER OF EMPLOYEES
Maintenance	60
Field Engineers	18
Bench Engineers	6
Sales	10
TOTAL	94

Key Products and Services

Nelson Computer Services provides a full on-site maintenance services for computer equipment.

Equipment maintained includes:

Business PCs: Most leading manufacturers; IBM, Compaq, Tandon, Olivetti, Amstrad, Apple, Acer, Epson, Tulip, Opus.

Peripherals: Most leading manufacturers.

Other equipment: Networks, CAD/CAM, punched card - IBM, ICL, Univac, Kode, Decision Data. Forms handling - bursters, decollators, gullotines.

Other services offered include:

- Software and hardware technical support
- Ad hoc workshop repairs
- Ad hoc on-site repair
- Installation
- De-installation
- Specialist CAD support
- Specialist network support

Financial Information

Exhibit B

TWO YEAR FINANCIAL SUMMARY (FYE 31-12) (MILLIONS)

YEAR	1989	1990
Revenue	2.1	1.75
Revenues derived from maintenance	1.1	1.7

COMPANY PROFILE

ACT GROUP PLC

ACT House
111 Hagley Road
Edgbaston
Birmingham B16 8LB
United Kingdom
Tel: 44 21 456 1234
Fax: 44 21 445 8427

Chairman: Roger Foster
Group MD: Mike Hart
Status: Public
Number of Employees: 1,300
Revenue (FYE 31-03-90): £141 million
(FYE 31-03-91): £99 million

The Company

In May 1990, this company changed its name from Apricot Computers plc to ACT Group plc. Apricot Computers had been founded (originally with the ACT name to which it was reverting) in 1965. The ACT Group is principally engaged in the development and supply of computer software, services and solutions. Its products and services are mainly provided to the government, commerce, finance, and healthcare markets.

In 1990 the group's four year strategy, to build its software and services activity to the point at which it was possible to dispose of its computer hardware business and still leave a major U.K. group trading in the higher growth and more profitable areas of software and services, was completed.

In April 1989, 100% of the DDT Group plc was acquired for a consideration of approximately 7 million. DDT was a group engaged in third party maintenance.

In June 1989, 100% of Logical Systems International Limited (LSI) was acquired for an initial consideration of 750,000 with up to 300,000 additional consideration based on subsequent trading performance. LSI was a software company operating in public sector markets.

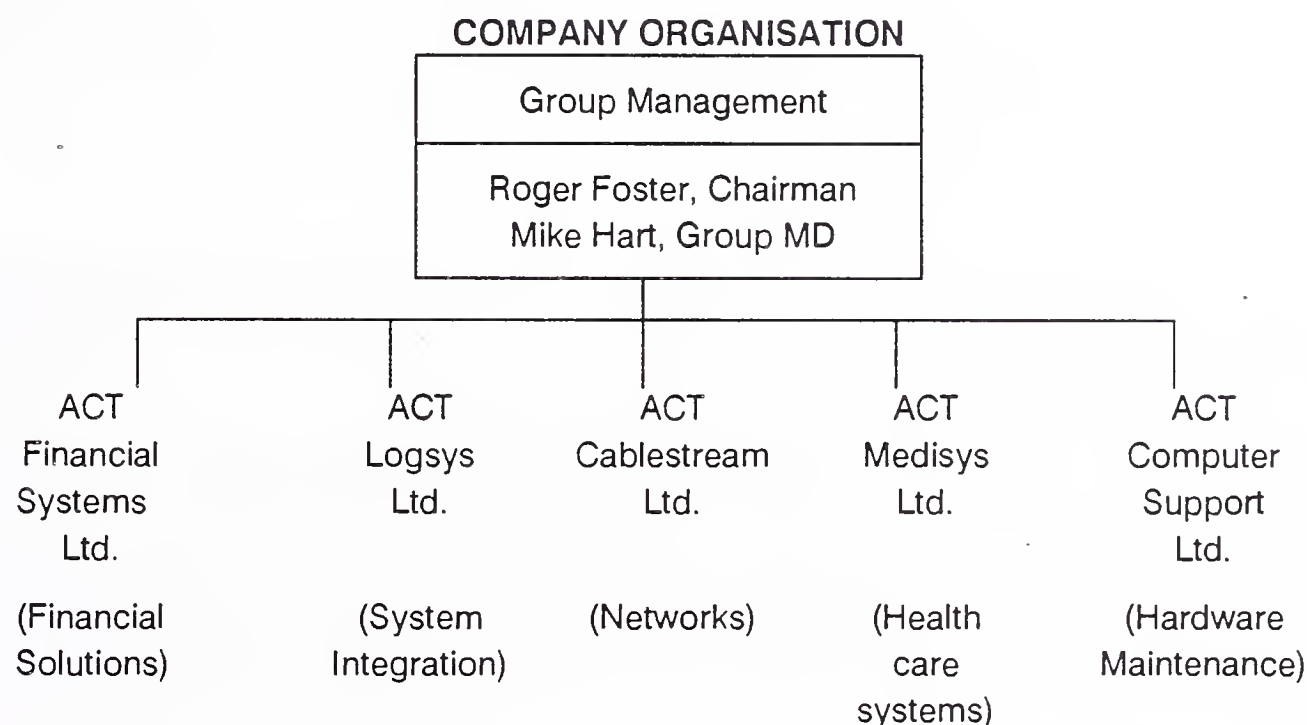
In November 1989, the group acquired ITL Information Technology plc for a consideration of approximately 12.6 million. ITL was a computer manufacturing group engaged in systems integration, systems and software for the healthcare market, maintenance and networking.

In May 1990, the sale of the computer hardware division to Mitsubishi Electric Corporation for a cash consideration of 39 million was completed. The disposal of the division was decided on because in recent years it had been returning low profits to the group.

Following the sale of the computer hardware business ACT is expecting a period of greater stability and more consistent profit and revenue growths.

In May 1991 ACT announced an offer of 27m for the Quotient, the UK-based international financial software business. Quotient had sales in calendar 1990 of 22.4 million and employed 370. Integration with ACT's financial services operations is expected to strengthen these activities with an extensive set of applications products and an international sales network.

Exhibit A



In March 1991, the ACT group employed 1,300 staff. The average number of employees during the previous year was 1,563.

Exhibit B

1990 ACT EMPLOYEE ANALYSIS BASED ON AVERAGE NUMBER OF EMPLOYEES

DEPARTMENT	NUMBER OF EMPLOYEES
Software and Services	1,058
Computer Hardware Manufacture	505
TOTAL	1,563

Exhibit C**OTHER EXECUTIVES**

NAME	POSITION
Brian Whitty	Group Finance Director
Peter Oldershaw	Commercial Director
Chris Winn	Director

Exhibit D**SHAREHOLDERS**

SHAREHOLDER	PERCENT OWNED
Singer & Friedlander Group Plc	20.2
Scottish Amicable Life Assurance Society	4.1
Old Court Limited	3.2
Other	72.5

Exhibit E**PRINCIPAL SUBSIDIARIES**

SUBSIDIARY	COUNTRY	% OWNED
ACT Financial Systems Ltd	U.K.	100
ACT Computer Support Ltd	"	"
DDT Maintenance Ltd*	"	"
DDT Maintenance (Ireland) Ltd*	Eire	"
ACT Logsys Ltd	U.K.	"
ACT Cablestream Ltd*	"	"
ACT Medisys Ltd*	"	"
Logsys (Advanced Systems) Ltd*	"	"
ACT Sigmex Ltd*	"	"
Apricot Sigmex BV*	Netherlands	"

* Held through subsidiary companies.

Key Products and Services

The ACT group is organised in 5 business divisions:

- ACT Logsys Ltd
- ACT Financial Systems Ltd
- ACT Medisys Ltd
- ACT Cablestream Ltd
- ACT Computer Support Ltd

ACT Logsys Ltd

The company is a leading supplier of open systems based solutions to the public sector with major customers such as The Civil Aviation Authority, Ministry of Defence, NATO and the RAF.

ACT Logsys provides a range of services including consultancy, systems design and implementation, project management and quality assurance.

The Open Systems Centre provides integrated solutions for local government, defence administration and major contractors, while the Advanced Systems Centre offers a specialist resource for the operations side of the defence sector.

The Government and Commercial Systems Centre focuses on open systems and integration services for the Government and selected private sector accounts.

Contracts awarded to ACT Logsys include custom software development services for Software Sciences' Type 242 frigate project, a compensation recovery unit project for the Department of Social Security, and the METIS meteorological weather mapping system adopted by the Dutch RAF.

ACT Financial Systems Ltd

The company is among the leading suppliers of software, services and consultancy to the financial services sector in the U.K. and internationally. It develops, markets and supports sophisticated software and services and has made hardware independence the focus of its product strategy. Its software addresses investment management, banking, insurance, dealing and retail finance. The client base includes the major clearing banks, leading pension funds, stockbrokers, building societies, unit trust management companies, insurance principals and insurance intermediaries.

ACT Financial Systems is involved in a series of initiatives including the implementation of links to the International Stock Exchange's automated settlement system, TAURUS, and the BROKERNET Standards for the insurance industry.

ACT Medisys Ltd

The company supplies products and services which cover all aspects of a hospital's administrative and clinician operations.

It provides IT consultancy, systems integration, training and support services for the healthcare sector. The client base includes 59 National Health Security districts.

ACT Medisys has developed VISION which is a 4GL database system which permits easy development of information processing in acute mixed speciality hospitals.

The company recently won the resource management pilot study for St Thomas' Hospital, London. ACT Medisys will be operating as prime contractor together with KPMG Peat Marwick McLintock and Oracle, and will also assist the hospital in the development of an IT strategy for the 1990s.

ACT Cablestream Ltd

ACT Cablestream specialises in the design and implementation of standards based corporate networks, particularly in the automotive and petrochemical industries, and the manufacturing, finance and public sectors. The client base includes Shell, BP, Ford, Peugeot, Rolls Royce, British Telecom and the Bank of England.

It also offers a full range of professional services, including consultancy, network design and installation, project management, support and maintenance.

ACT Computer Support Ltd

ACT Computer Support underpins many of the ACT Group subsidiaries' largest customer installations. It claims to be one of the U.K.'s top three IT service companies.

From a base of multi-vendor microcomputer services, the company has added a full minicomputer maintenance facility and developed a wide range of complementary network, UNIX and communications services.

The company's ongoing trading agreement with Mitsubishi, following the latter's acquisition of the Apricot microcomputer business, will continue to provide substantial maintenance and warranty revenues as the Apricot PC base expands. ACT Computer Support has the sole rights to Apricot PC spares distribution in the U.K.

One of the most prestigious contracts won to date for ACT Computer Support is the installation of 45 kilometres of Ethernet cabling at the National Audit Office (NAO). The network incorporates a remote kilostream link to the Edinburgh office and dial-in modem links to the NAO field staff.

Market Analysis

Exhibit F

1990 BUSINESS UNIT ANALYSIS (6 MONTHS TO SEPTEMBER 1990) (MILLIONS)

DIVISION/BUSINESS UNIT	REVENUE	PERCENT
ACT Logsys Ltd	10	24.3
ACT Financial Systems Ltd	10	24.3
ACT Medisys Ltd	2	4.9
ACT Cablestream Ltd	3	7.3
ACT Computer Support Ltd	16	39.0
TOTAL	41	99.8

Exhibit G

MARKET ANALYSIS BY INPUT DELIVERY MODE (Million) CALENDAR YEAR 1990 UK ONLY)

DELIVERY MODE	REVENUE*	PERCENT
Software Products	6	7
Turnkey Systems	12	15
Professional Services	29	35
Systems Integration	20	25
Customer Services (Equipment Maintenance)	15	18
TOTAL SOFTWARE & SERVICES	82	100

*INPUT Estimates

Exhibit H**1990 MARKET ANALYSIS BY GEOGRAPHIC AREA (MILLIONS)**

COUNTRY	REVENUE	PERCENT
U.K.	122.1	86.8
France	2.7	1.9
Netherlands	2.9	2.1
Scandinavia	0.8	0.6
Germany	1.2	0.9
Rest of Europe	3.6	2.6
Australasia	4.9	3.4
North America	1.8	1.3
Africa and the Middle East	0.3	0.2
South East Asia	0.1	0
Other	0.3	0.2
TOTAL	140.7	100

Financial Information**Exhibit I****SIX YEAR FINANCIAL SUMMARY (FYE 31-03) (£ MILLIONS)**

YEAR	1986	1987	1988	1989	1990	1991
Revenue	90.6	71.2	85.1	105.8	140.7	98.8
Annual Growth (%)		(21%)	20%	24%	33%	(30%)
Profit before Taxes	(15.4)	4.0	8.2	6.0	8.0	12.7
Annual Growth (%)			105%	(27%)	33%	59%
Profit after Taxes	(15.1)	2.8	3.6	3.0	3.7	-
Annual Growth (%)			29%	(17%)	23%	-
Earnings per Share	(20.83p)	5.03p	9.53p	6.22p	7.07p	-
Annual Growth (%)			89%	(35%)	14%	-

During 1990 the hardware division was sold.

B Independent Vendor Sector Market Forecast Reconciliation

Exhibit B-1

Independent Vendor Sector Market Forecast Reconciliation

COUNTRY	1990 FORECAST OF 1990 MARKET	1991 FORECAST OF 1990 MARKET	CAGR IN 1990 REPORT 1990-1995 (PERCENT)	CAGR IN 1991 REPORT 1990-1996 (PERCENT)
FRANCE	1830 M FF	1815 M FF	16	13*
GERMANY	177 M DM	175 M DM	16	15
UNITED KINGDOM	275 M £	270 M £	16	13
ITALY	135 B LIRA	140 B LIRA	15	16
SWEDEN	275 M SK	270 M SK	7	6
NETHERLANDS	225 M Dfl	225 M Dfl	14	13
BELGIUM	1450 M BF	1460 M BF	15	14
SPAIN	6435 M PTA	7945 M PTA	26	30

